Startup Migration: What Drives the Intra-Country Relocation of European Startups?

Massimo G. Colombo[1]

Anita Quas[2]

Bogdan Tofan[1]

[1] Department of Management, Economics, and Industrial Engineering, Politecnico di Milano, Milan, Lombardy, Italy

[2] Department of Economics, Management and Quantitative Methods, University of Milan, Milan, Lombardy, Italy

Abstract
In this study, we investigate startups' relocations of their headquarters (HQs) across different administrative areas of the same country. We examine the combined effects of startups' venture capital (VC) affiliation and local resource endowments – of venture capital, public financial support, talents, and innovative knowledge, on the probability of relocation and migrating startups' choice of their destinations. We use a longitudinal dataset of 23,216 European VC-backed and comparable non-VC-backed startups. We estimate Cox survival data analysis models of the likelihood of migration, and case-control conditional logit models of the choice of the destinations of migrating startups. The econometric results highlight the critical role of VC affiliation in influencing startups migration patterns, and of public support policies, like the EU Cohesion Policy, in making a location attractive to high-potential startups.

Keywords: Relocation, High-potential startups, Venture capital, Economic geography

1. Introduction

Entrepreneurs typically establish their startups where they live and have strong personal ties, leveraging their locally embedded social capital to access external resources (Figueiredo, Guimarães, & Woodward, 2002; Michelacci & Silva, 2007; Dahl & Sorenson, 2012). Despite these advantages, startups' initial locations are not necessarily the "optimal" ones, as they generally are not the outcome of a deliberate and informed choice (Stam, 2017). They may also become unattractive over time, as startups' needs for external resources (e.g., finance, talented managers and employees, innovative partners) evolve. The geographic mismatch between initial and optimal locations may induce entrepreneurs to relocate their startups.

While the literature on clusters (e.g., Kerr & Robert-Nicoud, 2020) and entrepreneurial ecosystems (e.g., Stam & Spiegel, 2018) has comprehensively examined local factors that stimulate the birth of new firms (Glaeser & Kerr, 2009; Delgado, Porter & Stern, 2010), and are positively associated with the quality of the newly born firms (Guzman & Stern, 2020; Andrews et al., 2022 and favor the presence of a higher number of high-growth startups (Stam & Van de Ven, 2021), studies on startups' relocation (or migration) defined as the move of the headquarter (i.e., the main office), are less numerous. This relative lack of attention is surprising, as relocation is a strategic decision for entrepreneurs. It is also a crucial policy concern. Migrating high-potential startups hurt the economic development and employment growth of the areas they leave behind. At the same time, areas that manage to attract a high number of high-potential startups born elsewhere thrive.

Moreover, studies on startups' relocations have focused on the impact on the performance impact of moving to selected areas in the U.S. (notably, the Silicon Valley or the

Boston-Cambridge area) that are prominent tech clusters and venture capital (VC) hubs (De Prijcker et al., 2019; Conti & Guzman, 2023; Guzman, 2024). Studies examining the patterns of startup relocation have considered VC-backed startups and described their migration flows across countries (Cumming, Fleming & Schwienbacher, 2009; Shi, Sorenson, & Waguespack, 2024; Weik, Achleitner, & Braun, 2024). However, these firms are a minority of the high-potential startups at risk of relocating. Bryan & Guzman (2023) investigated the relocation patterns of a large population of high-potential firms across U.S. states, while Lee (2022) considered the within- and across U.S. states relocations of a smaller sample of startups included in the Kauffman Firm Survey. In sum, our understanding of the drivers of startups' relocations, and the local characteristics that make certain areas more attractive for migrant startups, is limited.

This study contributes to the startup relocation literature by focusing on high-potential, VC-backed and non-VC-backed startups and examining their HQ relocations across small administrative areas (i.e., NUTS3 areas) within European countries. Our work shares with Bryan & Guzman's (2023) study the interest in the local factors that foster the HQ relocations of high-potential startups and influence the choice of the destinations of their relocations. However, our study differs from theirs in three critical aspects.

First, we compare the HQ relocations of VC-backed startups with those of similarly high-potential but non-VC-backed startups. This is an important addition to the literature, as scholars so far have either focused on samples composed of VC-backed companies (e.g., Cumming et al., 2009; Shi et al, 2024; Weik et al., 2024) or have considered populations of high-potential startups without distinguishing whether they are affiliated with VC investors or not (as Bryan &

Guzman, 2023 did). We expect the migration flows of startups to differ depending on whether they are affiliated with VC investors or not. VC investors allegedly pick and build "winners" (Baum & Silverman, 2004). They invest in startups with high growth opportunities (Puri & Zarutski, 2012) and help them realize these opportunities by providing capital and by coaching and monitoring them (Gorman & Sahlman, 1989; Gompers et al., 2020). VC-backed startups' superior growth opportunities may induce them to look for a more suitable location. The VC investors to which they are affiliated may also influence both their decision to migrate and their choice of the destination of their migrations (e.g., pressing them to locate their HQs near their lead VC investors' premises).

First, to the best of our knowledge, no previous study has investigated startups' relocations within European countries. The institutional context in which U.S. startups are embedded, related e.g., to the organization of the financial system, is different from that of European countries (e.g., Armour and Cumming, 2006; Bruton et al., 2005; Li and Zahra, 2012). The economic geographies of the U.S. and Europe share some common traits, such as the concentration of innovation activity and VC in large metropolitan areas (e.g., Crescenzi, Rodrigues-Pose, & Storper, 2007; Chen et al., 2010; Colombo, D'Adda, & Quas, 2019), but at the same time differ in important aspects. For example, the contribution of cities, especially the largest ones, to GDP growth and the degree of spatial inequality in wage income are lower in Europe than in the U.S. (Garcilazo, Moreno-Monroy & Martins, 2021; Bauluz et al., 2023). Therefore, it is questionable whether the evidence on U.S. startups' migration flows and drivers can be generalized to Europe. Third, we examine startups' relocations across small administrative areas (i.e., NUTS 3 areas) within European countries. This type of relocation is

likely more frequent than cross-states/regions or international relocations, as it enables startups to improve access to key local resources without incurring the costs associated with relocating their HQs over long distances.[1]

In sum, our work addresses the following research questions: Does the local scarcity of VC, talented personnel, innovative knowledge, and public financial support encourage startups to relocate their HQs across small administrative areas within their countries? Does a rich local endowment of these resources make a destination attractive for migrant startups? How do HQ relocation patterns differ between VC-backed and non-VC-backed startups?

To answer these research questions, we considered a sample composed of 9,672 VC-backed and 13,544 comparable non-VC-backed startups born in 7 European countries (the Czech Republic, Denmark, France, Germany, Italy, the Netherlands, and the United Kingdom) in the period 2000-2021. We tracked their first headquarters relocations across different NUTS3 areas over the first ten years of their existence, or until they were eventually acquired or ceased operations (e.g., due to bankruptcy), or until 2023.

Our data reveal that startups' within-country HQ relocations are frequent, affecting 25% of our sample companies. VC-backed firms are more mobile than their non-VC-backed counterparts, both before and after receiving their first VC round. However, our evidence on the treatment effect of VC affiliation on the probability of migration is inconclusive. Moreover, there are similarities and differences in the migration patterns of VC-backed and non-VC-backed startups. Independent of VC affiliation, startups are inclined to abandon areas poorer in

[1] Accordingly, Lee (2022) revealed that in the U.S., startups' within-state relocations were more beneficial than cross-state ones.

innovative knowledge, public financial support, and to a lesser extent talented prospective employees. VC hubs and areas with greater public financial support are also more attractive to both types of startups, even though the effects of these factors are stronger on the destination choices of migrating VC-backed startups. Non-VC-backed startups are more likely to migrate if they are initially founded in VC hubs and when migrating, are less likely to choose areas with a greater stock of local innovative knowledge, contrary to their VC-backed counterparts.

This study makes several contributions to the entrepreneurship and economic geography literatures. First, it contributes to the literature on startup migration by investigating startups' within-country HQ relocations across small administrative areas. We highlighted the differences in migration flows between VC-backed and comparable, but non-VC-backed, startups, and how these flows are differently influenced by the local endowment of key resources: VC, public financial support, talents, and innovative knowledge. We also contribute to the literature on startup agglomeration. While this literature has primarily focused on local factors that promote startup birth (see Chen & Ewens, 2025, for an exception), we highlight local characteristics that influence the inflow and outflow of startups, influencing their agglomeration, and how their role differs between VC-backed and non-VC-backed startups. Lastly, we contribute to the VC literature by investigating the relation between startups' VC affiliation and their within-country mobility.

2. Literature review and conceptual framework

2.1. Literature review

The literature on startups' migration is still in its infancy, and evidence on its drivers and impact is limited. Scholars generally agree that improving access to local resources (e.g., finance,

innovative knowledge, and talented personnel) is a key factor influencing entrepreneurs' decisions to relocate their startups' HQs

. Accordingly, studies on U.S. startups have unanimously documented the positive impact of startups' migration to prominent VC hubs and tech clusters. In an early study, De Prijcker et al. (2019) tracked the location of a large sample of U.S. high-tech startups founded between 1995 and 2009 from their foundation to a maximum age of 16 years. 3.1 percent of the sample startups relocated their HQs across U.S. states. 14 percent of the migrating startups relocated to California or Massachusetts, the U.S states hosting the most prominent VC hubs and tech clusters. Their findings indicate that startups founded in states with a more limited supply of VC were more likely to migrate to California or Massachusetts. The ones that migrated to these destinations were 3.7 times more likely to obtain VC than those remaining in the state where they were founded and 2.1 times more likely to get VC than homegrown startups. Similarly, Guzman (2024) examined the performance impact of U.S. startups' cross-state migration to Silicon Valley in their first two years of existence. He focused on growth-oriented startups, as indicated by their registration under Delaware jurisdiction. 2.2 percent of sample firms relocated their HQs across states. 0.2 percent of the startups that were not founded in California migrated to Silicon Valley. Using different statistical techniques to account for endogeneity, he documented that startups' migration to Silicon Valley had a dramatic positive impact on their performance, measured by successful exit through an IPO or an acquisition, receipt of VC, and obtaining a patent or a trademark.[2] Migration to other destinations did not lead to similar

[2] For example, the double Lasso machine learning cross-sectional estimates indicated that startups migrating to Silicon Valley experienced a 277 percent increase in the likelihood of an equity outcome represented by a successful

performance improvements, except for trademarks. In addition, the positive effects of migration to Silicon Valley on the probability of a successful exit were larger for startups leaving regions with a lower stock of innovative knowledge, measured by patents per capita. Conversely, the negative moderating effect of the local supply of VC disappeared after controlling for local patents. Conti & Guzman (2023) considered a sample of 2,179 Israeli startups that either received VC or were defined as "seeking capital" by the Israeli venture capital association, out of which 290 migrated to the U.S, with more than half to California. They found that migrants to the U.S. are the startups with the highest potential. Again, the benefits of migrating to the U.S. were substantial for Israeli startups, resulting in a higher probability of applying for a U.S. trademark, attracting a U.S. VC investor, being acquired, especially by U.S. acquirers, and going through an IPO in the U.S.. Migration resulted also in a substantial increase in the amount of VC startups raised and in their valuation at acquisition.

A few studies examined the migration patterns of startups across U.S. states. Bryan & Guzman (2023) considered the universe of startups registered in Delaware as corporations or limited liability companies (LLCs) and born between 1988 and 2014 in 35 U.S. states and the district of Columbia. They tracked their HQ relocations across U.S. states in the first five years of their existence.[3] 6.6 percent of corporations and 2.8 percent of LLMs moved their HQs to an MSA in a different state from the one where they were initially located. The probability of migration decreased with firm age, from 2.1 percent in the first year to 0.4 percent in year five.

---

exit, a 218 percent increase in the likelihood of obtaining VC, and 162 percent and 47 percent increases in the likelihood of obtaining a patent or a trademark, respectively.

[3] This population includes subsidiaries of other companies and companies created through a merger or an acquisition, in addition to entrepreneurial ventures.

The authors then used bilateral migration flows between MSAs to estimate the utility of moving to a focal MSA relative to starting a firm there. Cities with the highest number of newly created startups per capita (i.e., startup hubs such as San Jose, San Francisco, and Boston) were not the most attractive for migrant startups. Indeed, many important startup hubs lost more startups to other states than they attracted, even though they managed to attract more high-quality startups, based on Guzman & Stern's (2020) quality measure.[4] In accordance with this evidence, Chen & Ewens (2025) showed that the abundant supply of early-stage capital in U.S. states where VC is concentrated (i.e., California and Massachusetts) made these locations especially attractive for high-growth capital-seeking startups. They exploited a natural quasi-experiment consisting of a change in the U.S. banking regulation that prohibited banks from investing in VC funds (i.e., the implementation of the Volcker rule in 2014). Their difference-in-differences estimation revealed that after the adoption of this regulation, more capital-seeking startups in states with higher bank exposure were more likely to relocate their HQs to VC hubs, but not to other areas. In other words, the rule change impacted the relocation of these startups' HQs across states, suggesting that the supply of VC explains (some of) the observed startup migration flows.

To the best of our knowledge, Lee (2022) is the only study that examined the inter-state and intra-state HQ relocations of U.S. startups and compared their performance impact. In a sample of 4,928 U.S. startups observed between 2004 and 2010, when they were 6 years old or younger, the intra- and inter-state relocation rates were comparable (3.9 and 3.4 percent, respectively). Intra-state relocations were positively associated with firm performance, as

[4] This was especially true for older movers (i.e., those moving at the age of 3 or older) that were attracted by lower personal and corporate state-level tax rates.

reflected in survival likelihood and post-relocation growth rate, while inter-state relocations were not.

Lastly, a few studies examined the international migration flows of VC-backed startups. The special interest in this category of firms is justified by the obvious policy concern that if a country's most promising startups face difficulties in obtaining the amount of external equity capital they need to grow rapidly, they are induced to relocate their HQs to locations where the VC supply is more abundant and VC investors are more reputable like U.S. VC hubs. Cumming et al. (2009) studied a sample of 468 private companies that were financed by 53 VC investors based in 12 Asia-Pacific countries. They showed that VC investors based in countries with weaker legal and economic conditions, which hinder the development of the VC industry, often relocated their investee firms to the U.S. The firms that were relocated outperformed those that stayed in their countries of origin. Weik et al. (2024) analyzed a sample of more than 11,000 VC-backed startups that were founded between 2000 and 2014 in 17 European countries, received their first round of VC at the age of 10 or when they were younger, were affiliated with one or more European VC investors in any of their rounds, and were included in the VentureSource commercial database. They found that 6 percent of the sample startups relocated their HQs to a foreign country, and the majority (85%) moved to the U.S. Their findings indicate that startups' affiliation with foreign VC investors in the first round, especially U.S. VC investors, is a strong predictor of their international migration. Around 10 percent of the startups receiving VC from U.S. VC investors in their first round relocated their HQs to the U.S. This effect was more pronounced in countries with a less developed VC market. They deduce that U.S. VC investors encouraged the relocation to the U.S. of their European portfolio companies to improve their

fundraising and exit prospects. Indeed, those who migrated to the U.S. enjoyed better valuation at exit than those who remained in their home countries. Clearly, the migration to the U.S. of a large number of high-potential startups is a serious policy concern.[5]

Nonetheless, the evidence Shi et al. (2024) provided was less alarming. They analyzed the relocation decisions of a large sample of 75,710 startups that received their first round of VC between 2000 and 2020 when they were 10 years old or younger. They obtained data on startups' HQ locations from 16 releases of VentureXpert, a popular commercial database. Only 1.4 percent of the sample startups migrated to another country. Moreover, countries with higher migration inflows, which generally have a more developed VC supply, also have higher migration outflows. Results of the estimates of a survival data analysis model indicated that startups affiliated with higher-status VC investors and VC investors that had previously invested in migrating companies, and those backed by more VC investors were at greater risk of migration. The estimates of a case-control model showed that non-U.S. startups were attracted to countries with a greater startup density in their industries. Independent of their country of origin, startups were more likely to move their HQs to countries from which their VC investors originated or where the syndicated partners of their VC investors were located. These findings confirm that the nationality and syndication strategies of the VC investors to which startups are affiliated strongly influence their international migrations.

The studies illustrated above offer interesting insights into the drivers of startups' HQ relocations and the characteristics that make a destination attractive for migrating startups.

---

[5] Though, the evidence that most migrating startups maintain sizable operations in their home countries partially alleviates this concern.

However, they leave many questions open. Most of what we know about startup migration relates to the cross-state migration of U.S. startups and the international migration of VC-backed startups. Can this evidence be generalized to the within-country (short- and long-distance) migration of startups located in countries, like European countries, where the economic geography and the institutional environment to which startups are exposed differ from those in the U.S.? Do the propensity to migrate and the choice of the relocation destinations of VC-backed startups differ systematically from those of similarly high-potential but non-VC-backed startups? Lastly, the effects of local public financial support (e.g., through subsidies) on startups' migration flows have remained under-researched in spite of their obvious importance in making a location more or less attractive. In the remainder of the paper, we make a first step in addressing these research questions.

2.2. Conceptual framework

Entrepreneurs typically establish their startups in the locations where they reside and have strong personal ties (Figueiredo, et al., 2002; Michelacci & Silva, 2007; Dahl & Sorenson, 2012). Even though entrepreneurs can leverage their locally embedded social capital to access external resources at low cost, their startups' initial locations are not necessarily the "optimal" ones, as entrepreneurs initially are "locationally ignorant" (Stam, 2007, p. 32) and likely do not envision where to locate their newly created startups. Hence, once their startups have survived the initial establishment phase and entered the early growth phase, entrepreneurs may consider moving their startups' HQs elsewhere.

We assume that at this stage, entrepreneurs will decide to move their startup's *i* HQs to a new location *j* if the economic and personal benefits of the new location compared to the existing

location, denoted by B_{ij} and P_{ij}, respectively, are greater than the costs of searching for a new location (S_i) and moving there (C_{ij}). In other words, we will observe the HQ relocation of startup *i*, if the following condition is met: $(B_{ij}+P_{ij})-(S_i+C_{ij})>0$, for at least one location *j*. In this situation, entrepreneurs will choose the destination for which the difference between the benefits and costs of the relocation is greatest.

The personal benefits of the new locations include the amenities they will offer to entrepreneurs, as reflected, for example, in better weather, and personal economic advantages, such as those associated with a favorable tax rate or low housing costs (e.g., Albouy, 2016). The cost C_{ij} of the HQ relocation includes the opportunity cost that locally embedded entrepreneurs incur when they move their residence to their startup's new location, such as those associated with the loss of personal contacts (e.g., with friends) they have developed in their previous location, or the costs of commuting between the two locations. Here, we are interested in the economic advantages B_{ij} a new location may offer to startups compared to their initial locations and their determinants (i.e., the "push factors" that induce startups to leave their initial HQ locations and the "pull factors" that attract them to a new location, see e.g., Pellenbarg et al. 2002; Kronenberg, 2013). We are also interested in firm-level characteristics influencing the search costs S_i entrepreneurs incur if they envision changing the location of their startups' HQs.

The literatures on clusters (e.g., Kerr & Robert-Nicoud, 2020) and entrepreneurial ecosystems (e.g., Stam & Spiegel, 2018) have emphasized that the agglomeration of economic and financial activities in a restricted geographic space generates three types of Marshallian external economies that are specially beneficial for local high-potential startups: the pooling of labor input, especially highly skilled prospective employees; localized knowledge spillovers,

which facilitate innovation; and easier access to finance.[6] The local endowment of these resources influence the relative economic advantages of different locations, and thus startups' migration patterns.

Talented employees are a fundamental input for high-potential startups. Scholars have consistently documented that startups that manage to hire more talented employees perform better (Sauermann 2018). Nevertheless, attracting talented employees is challenging for startups due to their high risk of failure (i.e., their "liability of newness", Stinchcombe, 1965), lack of legitimacy, resource constraints and competition in the labor market from incumbent firms (Leung, 2003; Roach & Sauerman, 2024). An abundant (scarce) local supply of university graduates helps reduce (magnify) these challenges, making a location more (less) attractive for startups. New graduates are an important pool of prospective talented employees for startups. They also are likely to enjoy the specific job attributes startups may offer them (e.g., autonomy, task variety, and learning opportunities, Roach & Sauerman, 2024).

A similar reasoning applies to localized knowledge spillovers. It is commonly known that innovative activity is spatially concentrated (e.g., Carlino & Kerr, 2015). Moreover, knowledge has a limited spatial range. It exerts a great influence on surrounding economic activities, but this influence rapidly decays with increasing distance (Jaffe et al. 1993). Scholars embracing the theory of knowledge spillover entrepreneurship (Audretsch & Keilbach, 2007; Acs et al., 2009) have clearly documented that areas with a greater local stock of innovative knowledge generate

[6] Another source of external economies highlighted by Marshall is an abundancy of local suppliers and customers. However, this type of economies have been found to be less important as a stimulus to entrepreneurhsip (Glaeser & Kerr, 2009). In this study, we did not examine them among the drivers of startups' relocations. However, in our estimates we control for the relative industrial specialization of a location in the industry of a focal startup.

more entrepreneurial opportunities, which positively affect the rate of new firm creation (Audretsch & Keilbach, 2008). These areas also are attractive destinations for migrating startups that aim to benefit from the localized knowledge spillovers as home-grown firms do. For the same reason, startups that have been founded in areas poorer in innovative knowledge are more inclined to migrate.

Scholars agree that the local availability of VC strongly influences startups' migration flows. VC is a prominent source of finance for high-potential startups (Gompers & Lerner, 2001), with strong positive impact on their productivity (Chemmanur et al, 2011; Croce et al, 2013), innovation (Kortum & Lerner, 2000) and growth (Puri & Zarutski, 2012; Bertoni et al., 2011). However, the geographical distribution of VC investors is uneven, with most investors spatially concentrated in a few VC hubs in large metropolitan areas, like the Silicon Valley and the Boston-Cambridge area in the U.S., and the London and Paris metropolitan areas in Europe (see e.g., Chen et al., 2010; Cumming & Dai, 2010; Colombo et al., 2019; Chen and Ewens, 2025). In addition, VC investors exhibit a strong local bias and are inclined to invest at a short distance. In this way, they leverage their local networks of informants to identify and screen potential investment targets (Sorenson & Stuart, 2001). The costs of coaching and monitoring investee firms are also lower if they are located close to the VC investors' premises (Bernstein et al., 2016). Scholars have highlighted that VC investors' local investment bias also influences startups' demand for external equity. For example, Colombo et al. (2019) showed that European startups located more than 250 kilometers from VC hubs were unlikely to look for VC at all. Alternatively, startups may decide to move their HQs to VC hubs, aiming to improve their chances of obtaining the VC they need (De Prijcker et al., 2019; Conti & Guzman, 2023;

Guzman, 2024; Chen & Ewens, 2025). For the same reason, the abundant VC supply in VC hubs discourages startups from migrating.

Lastly, public financial support to local firms likely alters an area's attractiveness to startups. Scholars have provided mixed evidence on the effectiveness of policies supporting startups and skepticism abounds in this domain (Lerner, 2009). Nevertheless, access to more generous local public subsidies in a new location increases the economic benefits for startups of abandoning their initial HQ locations and moving to this location. For instance, the European Union's Cohesion Policy channels significant funding to specific NUTS2 regions to reduce regional economic and social disparities (Crescenzi & Giua, 2020), making these areas attractive destinations of startups' migration.

In sum, we argue that the economic benefits of startups' HQ relocations will be higher if migrant startups can access locally embedded resources that are fundamental to their survival and growth in their new locations. The availability of an abundant supply of VC, public financial support, a large number of university graduates, and a great stock of innovative knowledge are prominent geographically tied resources for startups, which likely influence their incentives to migrate and the destinations of their migrations. However, we also argue that the costs startups incur while searching for a new location for their HQs and the economic benefits of moving their HQs to the new locations are different depending on whether startups are VC-backed or not. First, VC investors look for investment targets with great growth opportunities (i.e., they aim to pick winners, Baum & Silverman, 2004). These startups are inherently more mobile than other startups. Their greater growth opportunities increase the economic benefits of moving from the areas where they were initially founded to new locations, with a more abundant endowment of

key resources. Second, VC affiliation likely reduces startups' search costs for a new location. As part of VC investors' coaching, VC-backed startups can take advantage of the network of contacts of their VC investors with providers of professional services (e.g., real estate agencies, architects, lawyers, etc.), removing the information constraints that may prevent non-VC-backed firms from relocating their HQs and selecting as destinations of their migrations locations with a more abundant supply of key resources. Lastly, we mentioned earlier that the monitoring and coaching costs incurred by VC investors rapidly increase with the distance of investee firms' HQs from their premises. Hence, they may press investee firms to relocate closer to their premises or even include their HQ relocations as a necessary condition for obtaining VC (Weik et al., 2024).

3. Data and methods

3.1. Sample

We test our predictions on a panel dataset composed of startups founded between 2000 and 2021 in seven European countries: the Czech Republic, Denmark, France, Germany, Italy, the Netherlands, and the United Kingdom. The dataset includes 9,672 VC-backed startups and 13,544 startups that did not obtain VC but can be regarded as potential targets of VC investments, as we will describe in detail below.[7]

The sample of VC-backed companies was extracted from the 6.0 release of the VICO database (http://risis.eu/data/vico-dataset/). VICO is a proprietary database developed at

[7] The choice of the seven countries is based on the availability of data on within-country relocations, as described below.

Politecnico di Milano with the support of the RISIS and RISIS2 projects, funded by the European Commission under the FP7 and Horizon 2020 programs. The database contains geographic, industry, and accounting information sourced, cross-checked, and harmonized using various secondary sources (i.e., Thomson Eikon, Zephyr, and Crunchbase). It includes the population of VC-backed firms that were founded after 1988, were located in the European Union countries, the UK, and Israel, and received their first VC round when they were 10 years old or younger. Accounting information was retrieved from the Moody's Datahub. In the seven countries under consideration in this study, VICO includes information on 12,783 VC-backed startups founded between 2000 and 2021 with accounting information.

We retrieved the sample of non-VC-backed companies from the Moody's Datahub database using the following procedure. First, to get an initial sample of non-VC-backed startups, we resorted to a stratified random sampling, with strata based on startups' country and foundation year. Each stratum's sample size was set to 50 times the number of VC-backed startups in the corresponding stratum of the VICO database. We excluded from this sample the non-VC-backed companies that were not independent at birth (e.g., subsidiaries, spinoffs). To do so, we retrieved from the Moody's Datahub database the ownership structure of each company and excluded firms that ever had majority external ownership (i.e., other firms owned 50% or more of their shares) during their observed history and those for which ownership data were not available. We ended up with a sample of 416,627 non-VC-backed startups. Second, we used a combination of Coarsened Exact Matching (CEM) (Blackwell, Iacus, King, & Porro, 2009) and Propensity Score Matching (PSM) to extract a sample of non-VC-backed startups that had observable characteristics as similar as possible to those of sample VC-backed startups in the

year of their first VC round. More precisely, we performed a CEM based on 5 total asset classes, 5 age classes, countries, and industry aggregations.[8] After excluding unmatched companies, we obtained a sample of 12,147 VC-backed and 383,300 non-VC-backed companies. Third, we used a 1:3 nearest-neighbor PSM, using as matching variables firm age, total assets, total assets yearly percentage growth, industry, and country. The final sample encompassed 9,672 VC-backed startups and 13,544 matched non-VC-backed peers. The Rubin's B (i.e., the absolute standardized difference of the means of the linear index of the propensity score in the "treated" and matched groups) and the Rubin's R (i.e., the ratio of the variances of the propensity score in the two groups) are equal to 22.9 and 1.19, respectively, indicating a satisfactory post-matching balancing (Rubin 2001). Table A1 in the appendix presents the covariate balance diagnostics for the unmatched and matched samples, confirming that after matching, all observable characteristics are well-balanced between the VC-backed and non-VC-backed firms.

In our final dataset, we observed these companies over the first 10 years of their existence, or until they were acquired or ceased operations, or until 2023. 84.7 percent of the startups in the sample are from the United Kingdom, France, and Germany. 28.8 percent of them

[8] The five asset classes were as follows: = 0 ml Euro; <0.098 ml Euro; ≥0.098 ml Euro and <0.478 ml Euro; ≥0.478 ml Euro and <1.87 ml Euro; >1.874 ml Euro. The five age classes were as follows: (<1 year old; ≥ 1year old and <2 years old; ≥2 years old and <4 years old; ≥4 years old and <6 years old; ≥6 years old and ≤10 years old). We distinguished the following industry aggregations, based on the Eurostat aggregation of manufacturing and services industries according to their technology and knowledge intensity (based on the NACE Rev. 2 classification at 2-digit level, see https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec_esms_an_3.pdf): Information Technology services (including software and telecommunication services), Other knowledge intensive services, Other services, Life science industries (including pharmaceuticals, medical equipment manufacturing, biotechnology, healthcare services, and veterinary activities), Other high- and medium tech manufacturing, Other manufacturing, and Other industries.

are in IT services, 25.6 percent in other knowledge-intensive services, and 6.4 percent in life sciences.

3.2. Startups' relocation data

We defined a startup's intra-country relocation of its HQs as *"the first legal main office address change from one NUTS3 to a different NUTS3 of the same country."*. Eurostat's NUTS3 classification ensures capturing moves between distinct statistical territorial units. The seven countries selected for this study provide publicly accessible legal records that document time-variant main office locations in national registries or commercial databases. In each country, we relied on a specific national official data source tied to the national registry (see Table A2 in the Appendix). In each registry, information on firms' main location is registered and made available in different ways. Therefore, we designed seven different data retrieval algorithms to obtain harmonized time-varying information on HQ location. Each address was then geocoded to EPSG:4326 coordinates (https://epsg.io/4326) and mapped to Eurostat-defined NUTS3 provinces (2016 version).

We found that 5,797 startups in our dataset, corresponding to 25 percent of the sample, underwent at least one intra-country HQ relocation over their first 10 years of existence (or by the censoring date). It is interesting to compare this figure with those found by previous studies on U.S. startups, even though caution is needed in interpreting the comparison, as the contexts of these studies differ from ours. For example, De Prijcker et al. (2019) found that only 4,906 U.S. high-tech startups out of the 155,435 in their sample, corresponding to 3.1 percent, moved their HQs across U.S. states. Bryan & Guzman (2023) reported that 6.6 percent of U.S. Delaware incorporated relocated from one U.S. State to another by their first 5 years of existence. Out of

the 4,928 startups examined by Lee (2022), 8.4 percent relocated their operations in a 6-year window, either across or within U.S. states.

One may doubt whether sample startups moved their HQs purely for fiscal or legal reasons, without any tangible influence on their operations. To check whether this may be the case, we relied on data on the location of startups' top managers, which we extracted from the Revelio database (https://www.reveliolabs.com). This database provides data on the location of (a sample of) the personnel of over 24 million companies worldwide, based on Internet sources. We focused on the 3,954 startups that relocated their HQs across NUTS2 regions, a subset of our NUTS3-level dataset (5,797 migrant startups). We used a broader geographical scope because self-reported location data from Internet sources like LinkedIn lack the precision needed for a reliable geocoding of individuals' locations at the NUTS3 level. We obtained time-varying data on the locations of top managers (i.e., the CEOs and other members of the C-suite)[9] for 1,261 migrant startups. For 1,245 of them, at least one top manager was based in the new HQ after the relocation. This evidence suggests that in our sample startups, HQ relocation involves an important change in firms' operations.

Startups' generally did not move at long distance. The average relocation distance of 87.5 km. However, a minority of startups (13.2%) moved their HQs at a distance greater than 200 km. For example, Musixmatch S.p.A., an Italian company founded in 2010, relocated its HQ from Bologna to Milan in 2011, a 220 km move. Other relocations involved short distance moves

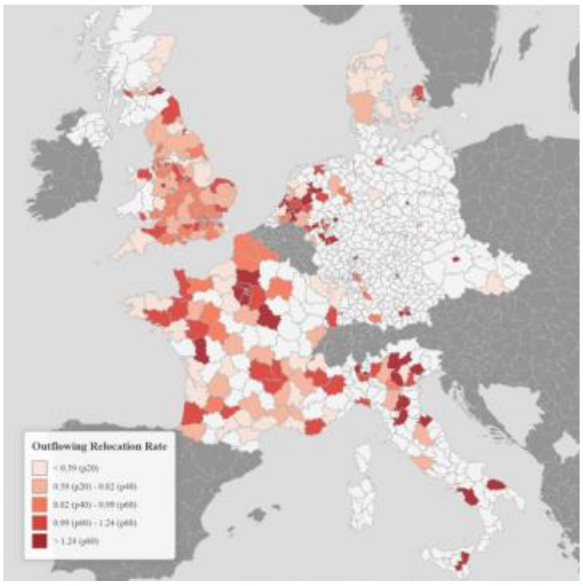
[9] More precisely, we considered all individuals whose job titles include the terms "Chairman", "Chief" (e.g., Chief Executive Officer, Chief Financial Officer, Chief Technology Officer, Chief Marketing & Sales Officer). In the absence of these terms, we considered the term "Vice-President" (e.g., for Finance, for Technology, for Marketing & Sales). Lastly, in the absence of these two types of terms, we considered the term "Head of" (e.g., Finance, Technology, Marketing & Sales).

between adjacent or non-adjacent but proximate NUTS3 areas. For example, the German firm Ingenious Tech AG, founded in 2004 in the rural municipality of Egmating, moved to the neighboring metropolitan region of Munich in 2009. The French firm Contentsquare, founded in 2008, relocated from Cergy to Paris in 2013. Both destinations were around 30 km from the startups' initial locations.

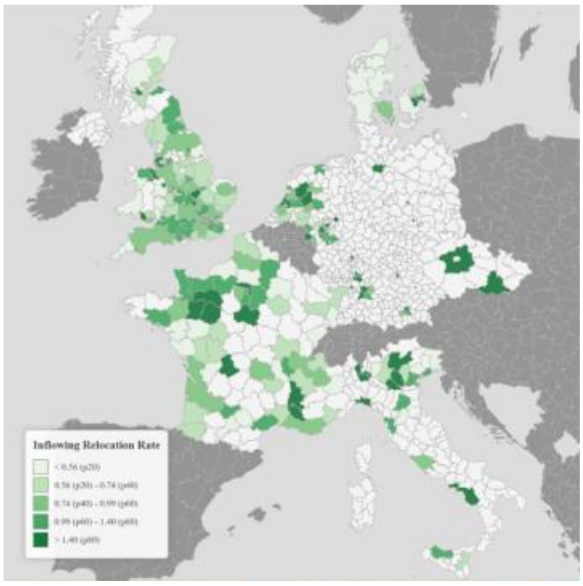
We found substantial heterogeneity across NUTS 3 areas in both the probability of HQ relocations from the focal area and the probability that the area was chosen as the destination of startups' HQ relocations. In Figures 1a and 1b we illustrate the relative outflow and inflow relocation rates of the NUTS3 areas considered in the study. The relative outflow relocation rate is calculated as the ratio between the number of startups that moved their HQs away from the focal NUTS3 area and the number of startups originally established in this area, scaled by the country's average relocation rate. Similarly, the relative inflow relocation rate is calculated as the ratio between the number of startups that relocated their HQs in the focal NUTS3 area and the number of startups originally established in this area, scaled again by the country's average relocation rate. In calculating these indicators, we considered only NUTS3 areas where at least 10 startups were originally established, to avoid "small number" problems. Data on the top 30 NUTS3 areas based on the values of the two indicators are illustrated in Tables A3 and A4 in the Appendix. Areas with high inflow relocation rates tend to also have high outflow relocation rates (the correlation between the two indicators is equal to 0.17). This especially applies to large metropolitan areas, like London, Paris, Munich, Milan, and Copenhagen.

Figure 1. The geography of startups' HQ relocation rates

1a. Relative outflow relocation rate



1b. Relative inflow relocation rate

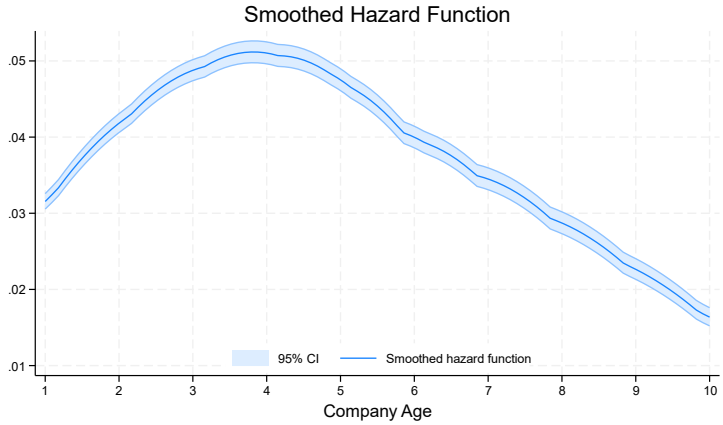


In Figure 2a, we report the Kaplan-Meier plot of the hazard rate of HQ relocation by firm age. In Figures 2b and 2c we distinguish VC-backed and non-VC-backed startups (i.e., startups that received one or more rounds of VC over their life and other startups). The hazard rate of the first HQ relocation peaked in the fourth year of the startup's existence, and then declined over time. Comparing the two groups, VC-backed startups exhibit a higher relocation probability with respect to their non-VC-backed counterparts.

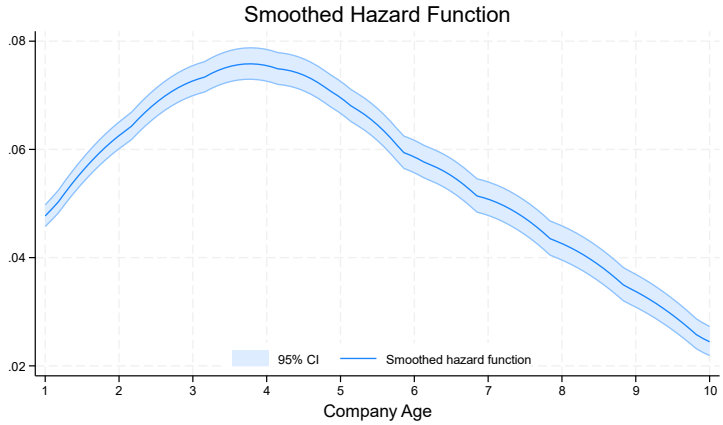
Previous studies also suggest that startups relocate quite early in their life. For example, the U.S. firms considered by Bryan & Guzman (2023) exhibited a monotonic reduction in the probability of moving their HQs by age. Conversely, focusing on non-U.S. VC-backed firms, Shi et al. (2024) showed that the hazard rate of moving the HQ abroad rose up to the fourth year of existence, and then declined. The hazard rate of international HQ relocation was lower and relatively constant for US VC-backed companies. The median age at relocation of the European VC-backed startups Weik et al. (2024) considered was 3 years.

Figure 2. Kaplan Meyer plot of the hazard rate of HQ relocation by firm age

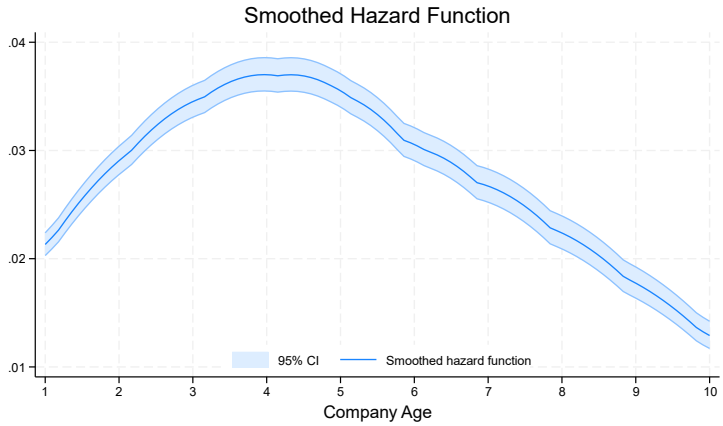
1a. Overall sample



1b. VC-backed startups



1c. Non-VC-backed startups



3.3 Econometric methodology

To investigate the drivers of startups' HQ relocations and test the role of "push" factors, we employed survival data analysis models. In these models, the dependent variable is the hazard rate of the relocation event, i.e., the likelihood that a focal startup relocates its HQ in a given year, conditional on not having relocated it before. We used Cox proportional hazards models (Cox, 1972) in a panel setting, using years since startup foundation as the time of exposure. Startups are observed in the first 10 years of their life, until their first relocation (if any), or the year when they were eventually acquired or ceased operations, or 2023, because of the right-censoring of the data.

To investigate where startups relocated their HQs, conditional on relocating it, and test the role of "pull" factors, we followed Shi et al. (2024) and estimated McFadden choice models (McFadden, 1974). For each HQ relocation from the NUTS 3 area where a focal startup' HQ was initially located to the new NUTS 3 area the startup choose as destination, we identified a set of possible counterfactual destinations (i.e., NUTS 3 areas where the focal startup could have relocated its HQ, but it did not). We estimated conditional logit models with "group" fixed effects, where a group includes the destination chosen by the startup and the counterfactual destinations. In this type of model, one relies on within-group variance to determine how the characteristics of the various destinations influence the destination choice. Specifically, for the 5,797 relocating startups included in our dataset, we considered, in addition to the 5,797 destinations they chose (cases), a set of 376,091 non-realized counterfactual destinations (controls). We identified as potential destinations all NUTS3 areas within the focal startup's country that had at least one incoming HQ relocation in the same year, but were not selected by

the focal startup as the destination of its HQ relocation. In our sample, there were, on average, 64 counterfactual relocation destinations for each chosen destination. To avoid problems the large number of zeros would generate in the estimates, we reduced the numerosity of controls for each case to a maximum case-controls ratio of 1:10 by randomly selecting a maximum of 10 counterfactual destinations for each selected destination, and running Monte-Carlo simulations (1,000 simulations).

3.4 Variables

In both the Cox models analyzing startups' decisions on whether to relocate their HQs and the McFadden choice models analyzing startups' selection of the destinations of their HQ relocations, we considered a set of regressors reflecting the key drivers of the relocation decision.

A first set of variables refers to the characteristics of the geographic areas (at NUTS 3 or NUTS 2 levels) where startups were initially headquartered in the Cox model or where relocating startups could have moved their HQs in the McFadden choice models.[10] The *VC Hub* dummy distinguishes NUTS3 areas with an abundant local supply of VC from other areas. More precisely, *VC hub* denotes the top 30 NUTS3 areas in the seven countries under consideration in this study by the cumulated VC investment amount over 1998-2021, based on the location of the investee firms at the time of the VC investment (source: VICO 6.0 database). The list of the VC hubs includes NUTS3 areas in London, Paris, Berlin, Amsterdam, Munich, Milan, Cambridge, and Oxford, among the top 15, and Copenhagen and Prague, among others in the remaining 15.[11]

[10] The terms "Origin" and "Destination" that precede the name of the variables describing the characteristics of the various geographic areas refer to the areas where ventures were located at foundation and to the areas where relocating ventures could have moved their HQs, respectively.

[11] In the robustness checks, we considered the top 15 VC hubs. We also defined VC hubs on the basis of the number of investments and considered the top 30 and top 15 NUTS3 areas. Results were unchanged.

The *EU Regional Expenditures* variable measures locally available public financial support. To build this variable, we summed the annual expenditures for each NUTS2 region and year of EU structural funds, including the European Regional Development Fund (ERDF), the Cohesion Fund (CF), the European Social Fund (ESF), and the European Agricultural Fund for Rural Development (EAFRD, previously EAGGF), and scaled the total amount by the region's active population. The EU funds data is provided by the European Commission through the Cohesion Data platform (https://cohesiondata.ec.europa.eu/). Population data is sourced from Eurostat (https://ec.europa.eu/eurostat/).

We also considered non-financial locally embedded resources to which startups may have access in a given NUTS3 area, reflecting talents and the innovative knowledge stock. The *Graduates* variable measured the yearly number of graduates from high-quality, EQAR-accredited academic institutions (source: ETER, the European Tertiary Education Register) in each NUTS3 area, normalized by the active population.[12] *Patents* measures the stock of local innovative knowledge in each NUTS3 area as reflected in the yearly number of applications of patents that were subsequently granted (source: PATSTAT), scaled again by the active population.

Startups' VC affiliation is our key firm-level independent variable. For VC-backed startups, it is equal to 1 in the year in which a startup received the first round of VC finance and in all subsequent years, and is equal to 0 in the years before the first VC round. For non-VC-backed startups, it is always equal to 0. We retrieved data on startups' VC affiliation from the

[12] In a robustness check, we replaced the number of graduates with the number of graduates in STEM (science, technology, engineering, and mathematics) disciplines. Results were similar to those that we will present in the text.

VICO 6.0 database. In the analysis of the choices of startups' relocation destinations, we also calculated the distance between each potential destination and the premises of the lead VC investors of all relocating VC-backed startups (*Distance VC Lead-Destination*).

We included two sets of controls in the model specifications. The first set reflects local characteristics of NUTS3 area that may influence startups' migration flows based on the evidence of previous studies. *Startup birth* captures regional entrepreneurial activity. It is the ratio of the number of newly founded limited liability companies (source: Moody's Datahub) to the active population (in 1,000 inhabitants) in each NUTS3 area and year. High entrepreneurial dynamism is a double-edged sword for young startups. It can make an area more attractive because of knowledge spillovers and a more abundant supply of specialized business services, but it also increases competition for resources among startups, with opposite effects (e.g., Bryan & Guzman, 2023; Shi et al., 2024). *Industrial specialization* reflects the industrial composition of a NUTS3 area in a given year. It is the share of the revenues accounted for by companies that are in the same industry as a focal startup out of the total revenues of all companies located in a given NUTS3 area. Data on firms' revenues are from Moody's Datahub. NUTS3 areas' specialization in the sector of a focal startup makes the areas more attractive for the startup because of partnership opportunities with local companies, a more abundant local supply of industry-specific human capital, and localized knowledge spillovers (e.g., Carlino & Kerr, 2015; De Prijcker et al., 2019). We also included in the model specifications several indicators reflecting local demographic and economic characteristics that make a NUTS3 area more or less attractive for young startups and their entrepreneurs (e.g., De Prijcker et al, 2019; Lee, 2022; Bryan & Guzman, 2023). They include the type of area (*Urban* and *Rural*, with intermediate

areas being the benchmark), the active population, in 100,000 inhabitants (*Population*), the size expressed in square kilometers (*Areakm2*), and the economic development (*GDP per capita*, in millions Euro) of the areas. Data were retrieved from Eurostat (https://ec.europa.eu/eurostat/) and complemented by data from the Office for National Statistics for the United Kingdom (https://www.ons.gov.uk/economy/regionalaccounts). We also considered favorable local atmospheric conditions (Bryan & Guzman, 2023), as reflected by the yearly number of sunshine days (*Sunshine days*. Source: Open Meteo, https://open-meteo.com/).

A second set of controls includes firm-level control variables. Firms' size and growth are measured by *Total assets* and *Assets growth* (De Prijcker et al, 2019; Lee, 2022). The former variable is firms' (log of) total assets (in Euro). The latter variable is the percentage yearly growth of firms' total assets. Both variables are lagged by 1 year (source: Moody's Datahub). We expect rapidly growing startups to be more inclined to relocate as the more promising business opportunities they face likely make their initial locations unsuitable. Larger firms have more resources facilitating relocations, but also have previous commitments (e.g., to a larger workforce), which may make HQ relocation more problematic. In the analysis of migrant startups' destination choices, we also included the distance between the startups' initial locations and the centroid of the NUTS3 considered as a potential destination, expressed in kilometers (*Distance origin-destination*). Lastly, in all models, we controlled for year, country, and industry fixed effects.

4. Results

4.1. Push factors driving startups' HQ relocations

Table 1 reports the descriptive statistics and correlation matrix of the variables used in the Cox survival data analysis models. Sample startups exhibited rapid growth, with a mean asset growth rate equal to 34 percent. As is usual for high-growth startups, the distribution of the asset growth variable is very skewed, with the top 10 percent of observations exhibiting a growth rate greater than 123 percent. The average firm size is equal to 9.2 million Euro. Again, the distribution is skewed. Total assets exceed 10 million Euros, corresponding to the EU definition of a small enterprise, in only 6 percent of observations. The *VC hub*, *Patents,* and *Graduates* variables are positively correlated with each other, but the correlations are relatively low (except for the one between *VC hub* and *Patents*). These three variables are positively correlated with *the GDP per capita* and *Startup birth* variables. These latter two variables are positively correlated with each other. The remaining correlations are low. We also checked the uncentered Variance Inflation Factor (VIF) for Model I (Table 3) stratified by year, macro-industry, and nation. We found that it was equal to 3.91, well below the commonly agreed-upon threshold of five (Belsley, Kuh & Welsch, 2005). Results are available from the authors upon request.

Table 1: Descriptive Statistics and Correlation Matrix of Origin Location Characteristics and Firm-Level Variables

Variable	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) Origin GDP per capita (in millions of EUR)	0.28	1.26	1.00						
(2) Origin Population (in 100,000 inhabitants)	5.46	5.08	-0.12	1.00					
(3) Origin Areakm2 (in 1,000 km²)	1.98	2.43	-0.14	0.12	1.00				
(4) Origin Urban	0.70	0.46	0.12	0.25	-0.59	1.00			
(5) Origin Rural	0.07	0.25	-0.05	-0.16	0.39	-0.41	1.00		
(6) Origin Sunshine Days	115.33	12.03	-0.11	0.31	0.45	-0.19	0.16	1.00	
(7) Origin Startup Birth (per 1,000 inhabitants)	13.84	21.49	0.67	-0.21	-0.32	0.27	-0.13	-0.26	1.00
(8) Origin Industrial Specialization (%)	0.19	0.18	0.02	-0.01	0.12	-0.09	0.08	0.10	-0.04
(9) ln Total Assets (lagged) thEUR	11.15	4.78	-0.04	0.14	0.13	-0.09	0.07	0.17	-0.10
(10) Asset Growth (lagged) (%)	0.34	0.91	0.02	0.03	-0.05	0.03	-0.04	-0.02	0.04
(11) VC	0.24	0.43	0.07	0.18	-0.06	0.09	-0.08	0.01	0.08
(12) Origin VC Hub	0.30	0.46	0.28	0.36	-0.32	0.31	-0.17	-0.18	0.43
(13) Origin HQ Graduates (per 1,000 inhabitants)	3.68	12.33	0.44	-0.05	-0.08	0.09	-0.05	-0.09	0.51
(14) Origin Patents (per 1,000 inhabitants)	0.41	0.73	0.42	0.11	-0.27	0.22	-0.12	-0.11	0.56
(15) Origin EU Regional Expenditures (€ per 10 inhabitants)	4.98	7.14	0.00	-0.02	0.20	-0.18	0.14	0.19	-0.08

Variable	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
(8) Origin Industrial Specialization (%)	1.00							
(9) ln Total Assets (lagged) thEUR	0.11	1.00						
(10) Asset Growth (lagged) (%)	-0.03	0.17	1.00					
(11) VC	-0.07	0.20	0.14	1.00				
(12) Origin VC Hub	-0.05	0.00	0.05	0.19	1.00			
(13) Origin HQ Graduates (per 1,000 inhabitants)	0.00	0.01	0.02	0.11	0.17	1.00		
(14) Origin Patents (per 1,000 inhabitants)	-0.03	0.05	0.03	0.16	0.52	0.25	1.00	
(15) Origin EU Regional Expenditures (€ per 10 inhabitants)	0.01	0.06	0.02	0.03	-0.14	-0.04	-0.09	1.00

Legend. The number of observations is equal to 126,098 for all variables.

We show in Table 2 the results of the Cox estimates of the hazard rate of startups' HQ relocation. Let us first consider control variables. Startups were less likely to relocate their HQs if they were founded in larger and more populated NUTS3 areas, and areas with greater GDP per capita, greater specialization in their own industries, and more sunshine days. They were also less likely to abandon rural areas. Conversely, a higher local startup birth rate made startups more inclined to move their HQs elsewhere. As to firm-level variables, larger and more rapidly growing startups were more likely to migrate. The coefficients of all these variables were significant (p-value<0.05 or better). Some of their effects were also of a large magnitude. For example, when the values of the *Startup birth*, *Total assets* and *Assets growth* variables increased from the 5th percentile of the variable distribution to the 95th percentile, the cumulated probability of startups' HQ relocation by the tenth year of their existence increased by 8.2, 11.2 and 5.2 percentage points.

In Model 1, the coefficients of *Origin graduates*, *Origin patents*, and *Origin EU regional expenditures* are lower than 1 and significant (p-value<0.001). Startups that are initially located in NUTS3 areas with more high-quality university graduates, more patent activity, and more EU public regional support from EU funds are less likely to relocate their HQs than those founded in other areas. In contrast, quite surprisingly, startups founded in VC hubs exhibited a significantly higher likelihood of HQ relocation (p<0.01). Lastly, VC-backed startups were significantly more

likely to relocate their HQs than their non-VC-backed peers ($p < 0.001$). The magnitude of the difference is large. With all other variables at their mean values, the estimated probability of relocating the HQ by the 10^{th} year of existence is 40.7 percent for VC-backed startups as opposed to 24.1 percent for non-VC-backed ones.

In Model II, we inserted in the model specification the interactive terms between *VC* and the *Origin VC hub*, *Origin graduates*, *Origin patents* and *Origin EU regional expenditures* variables. The aim was to check whether the drivers of the relocation of VC-backed startups differed from those of their non-VC-backed peers. The interactive term *VC x VC hub* is lower than 1 and significant (p-value<0.001). Indeed, the null hypothesis that VC-backed startups are not more likely to relocate their HQs if they are founded in a VC hub than elsewhere cannot be rejected (p-value=0.92). Hence, non-VC-backed startups located in a VC hub are more likely to relocate their HQs than those located elsewhere, but this does not apply to VC-backed startups. The other interactive terms are not significant, indicating that there are no other major differences in the relocation drivers of VC-backed and non-VC-backed startups.

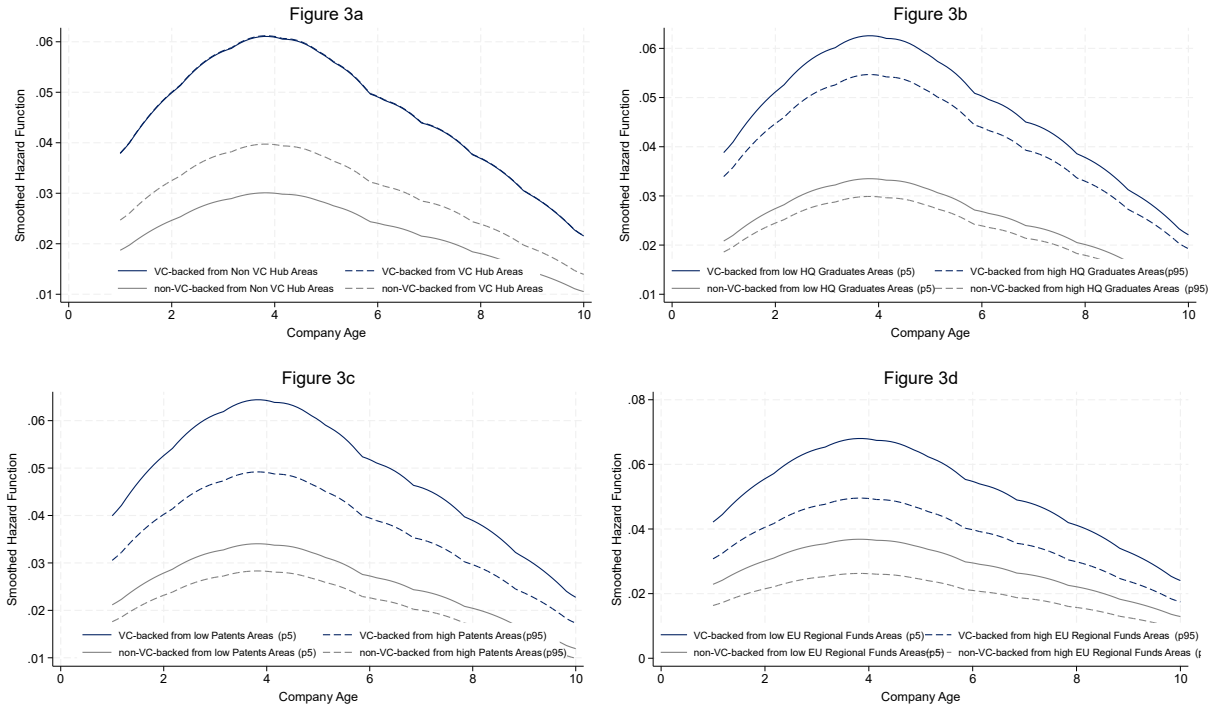
Table 2: Drivers of startups' HQ relocation

		I	II
α1	Origin GDP capita	0.981**	0.982*
		(0.009)	(0.009)
α2	Origin Population	0.949***	0.951***
		(0.006)	(0.006)
α3	Origin Areakm2	0.893***	0.890***
		(0.011)	(0.011)
α4	Origin Urban	1.079	1.062
		(0.053)	(0.053)
α5	Origin Rural	0.641***	0.655***
		(0.072)	(0.073)
α6	Origin Sunshine Days	0.991***	0.991***
		(0.002)	(0.002)
α7	Origin Startup Birth	1.007***	1.007***

		(0.001)	(0.001)
α8	Origin Industrial Specialization	0.763**	0.778**
		(0.094)	(0.096)
α9	ln Total Assets (lagged)	1.032***	1.032***
		(0.005)	(0.005)
α10	Asset Growth (lagged)	1.063***	1.063***
		(0.013)	(0.013)
α11	VC	1.794***	2.096***
		(0.054)	(0.099)
α12	Origin VC Hub	1.205***	1.330***
		(0.046)	(0.060)
α13	Origin HQ Graduates	0.994***	0.995***
		(0.001)	(0.001)
α14	Origin Patents	0.894***	0.913***
		(0.025)	(0.031)
α15	Origin EU Regional Expenditures	0.979***	0.977***
		(0.003)	(0.004)
α16	VC x Origin VC Hub		0.756***
			(0.050)
α17	VC x Origin HQ Graduates		0.999
			(0.002)
α18	VC x Origin Patents		0.959
			(0.035)
α19	VC x Origin EU Regional Expenditures		1.001
			(0.006)
	Year FE	Yes	Yes
	Country FE	Yes	Yes
	Industry FE	Yes	Yes
	Observations	126,098	126,098
	Companies	23,216	23,216
	Relocations	5,797	5,797
	χ2	3.311.2	3,347.4
	H0: α12+α16=0		1.006
			(0.057)
	H0: α13+α17=0		0.994***
			(0.001)
	H0: α14+α18=0		0.876***
			(0.030)
	H0: α15+α19=0		0.978***
			(0.005)

*Legend. The Table reports Cox model exponentiated coefficients and, in parentheses, standard errors. The event of interest is the first relocation of the startup, during the first 10 years of its life. Data is right censored in 2023. We use Wald tests to test null hypotheses. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Figure 3: Predicted HQ relocation probability of VC-backed and non-VC-backed startups by age at different values of VC Hub (3a), graduates (3b), patents (3c), and EU regional expenditures (3d)



Legend. Predicted HQ relocation hazard rates are calculated based on the estimates of Model II in Table 2.

In Figure 3, we show how the relocation hazard rates of VC-backed and non-VC-backed startups vary by exposure time and different levels of the drivers under consideration. In Table 3, we report the values of the estimated cumulated probability of HQ relocation of VC-backed and non-VC-backed startups by the tenth year of their existence, at different values of the variables reflecting the resource endowments of the NUTS3 area where startups were initially located (*Origin VC hub*, *Origin graduates*, *Origin patents*, and *Origin EU regional expenditures*) and holding the other covariates at their means. The aim is to quantify the magnitude of the effects associated with variations of these variables on the probability of relocation. We used the results of the estimates reported in columns II of Table 2 to predict relocation probabilities. The unconditional cumulated relocation probability is equal to 25%. The results indicate that the local EU public support is the strongest push factor. An increase of this variable from the value

corresponding to the 5th percentile of its distribution to the one corresponding to the 95th percentile reduces the probability of relocation by 8.9 percentage points (-26%) for non-VC-backed startups and by 9.9 percentage points (-22%) for VC-backed startups. At the other extreme, a similar increase in *Origin graduates* leads to a more limited reduction of the relocation probabilities (2.4 and 4.2 percentage points for non-VC-backed and VC-backed startups, respectively, corresponding in both cases to a 10% decrease). The local stock of innovative knowledge has an intermediate effect, but stronger for VC-backed firms (8.3 percentage points, corresponding to a 19% reduction; the reduction is equal to 3.7 percentage points, corresponding to a 15% reduction for non-VC-backed startups). Interestingly, being located in a VC hub has no observable effect on the relocation probability of VC-backed firms but substantially increases the relocation probability of non-VC-backed firms by 6 percentage points (+28%).

Table 3: Predicted cumulated HQ relocation probabilities by the tenth year of startups' existence, for different predictors

		VC-backed startups		**Non-VC-backed startups**	
		Predicted probability	*Δ (%)*	*Predicted probability*	*Δ (%)*
Origin VC Hub	at 0	40.7%		22.4%	
	at 1	40.8%	0%	28.5%	+28%
Origin HQ Graduates	at p5	41.5%		24.6%	
	at p95	37.3%	-10%	22.2%	-10%
Origin Patents	at p5	42.5%		24.9%	
	at p95	34.2%	-19%	21.2%	-15%
Origin EU Regional Expenditures	at p5	44.3%		26.7%	
	at p95	34.4%	-22%	19.8%	-26%

We performed several additional analyses to assess the robustness of our findings. First, we changed the model specification and used discrete-time survival Probit models (Jenkins,

1995; Cameron & Trivedi, 2005) instead of Cox survival data analysis models. The results of these estimates are reported in Table A5 in the Appendix. They align with our main results.

Second, we altered the specifications of the independent variables reflecting NUTS3 areas' resource endowments, with results reported in Table A6 in the Appendix. We replaced the continuous *Graduates* and *Patents* variables with the dummy variables *Talent hub*, coded as 1 for any NUTS3 region containing at least one EQAR-accredited academic institution (Model I), and *Patent hub*, coded as 1 for NUTS3 regions ranking in the top 30 based on the number of patent applications per capita (Model II). We also used *EU regional payments*, measuring actual reimbursements for incurred costs, instead of the *EU regional expenditures* variable (Model III). Lastly, in defining the *VC hub* variable, we considered the top 15 VC hubs (*VC hub top 15*) instead of the top 30 (model IV). We also defined the top 30 (model V) and top 15 VC hubs on the basis of the cumulated number of investments (model VI) instead of the cumulated investment amounts. The results from these models remain consistent with our main findings. The only notable difference is that the magnitude of the effect associated with the *Talent hub* variable is much greater for VC-backed startups than for non-VC-backed ones. VC-backed startups' cumulated relocation probability by their 10^{th} year of existence is estimated at 37.7 percent if they are founded in a talent hub, as opposed to 42.5 percent in other NUTS3 areas. This corresponds to a 17 percent decrease, compared to a 6 percent decrease for non-VC-backed startups (from 25.1% to 23.5%).

It is also interesting to assess whether the positive association between VC affiliation and the probability of migrating is mainly due to a selection effect (i.e., more mobile startups are also more likely to obtain VC) or to a treatment effect (i.e., VC encourages startups' migration). To

this aim, we made three additional analyses. First, we applied the Oster (2019) procedure to measure the relative degree of selection on observed and unobserved variables (δ) and to compute a lower bound for our VC funding effects (β). The results are reported in Table A7. We compared the baseline specification of Model I, controlling only for age, year, country, and sector fixed effects, and the expanded specification of Model II, which includes all the control and explanatory variables of the main models. The value of δ suggests that the influence of unobservables would need to be over 1.7 times larger than that of observables to produce a null effect for VC. The value of β suggests that the effect of VC can be convincingly bounded away from zero. These findings suggest that unobservable factors that are correlated with the probability of obtaining VC and the probability of migrating are unlikely to explain the observed positive association between the two probabilities.

Second, we examined in greater detail the evolution over time of the migration probability of VC-backed startups. For this purpose, we replaced the VC dummy with three dummy variables. *Pre VC* is equal to 1 for VC-backed firms from their foundation year up to the year before the one in which they received their first round of VC, while it is equal to 0 in the remaining years. *First VC investment* is equal to 1 in the year of the initial VC investment, otherwise 0. *Post VC* is equal to 1 from the year after the first round of VC onwards, and is equal to 0 in the remaining years. The three dummy variables are always equal to 0 for non-VC-backed startups. Results of these estimations are presented in Table 4. They reveal that VC-backed startups exhibited a higher relocation probability than their non-VC-backed counterparts both before and after the first round of VC. However, their relocation probability increased most sharply in the year in which they received their first VC investment (see Weik et al, 2024 for

similar results). This dynamic is illustrated in Figure 4. Based on the estimates of Model I of Table 4, we plotted the predicted cumulated HQ relocation probabilities over the years of a representative VC-backed startup that received VC for the first time when it was 2 years old (i.e., the median startup age at first VC round in our sample), and compared them with those of a non-VC-backed startup.

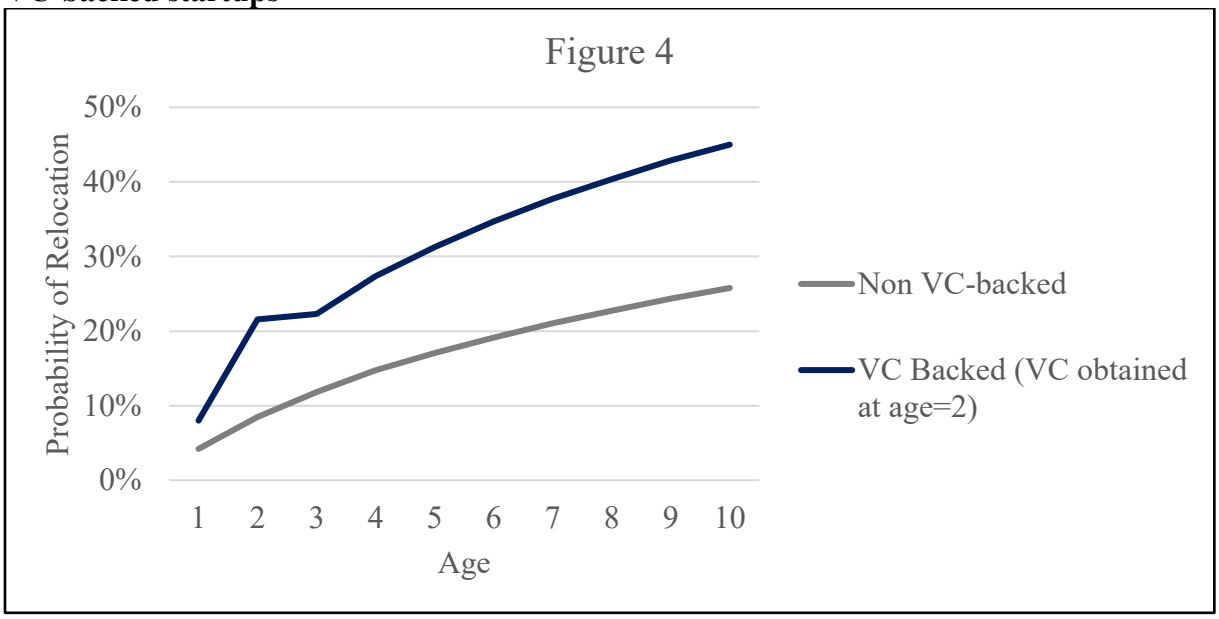
Table 4: Drivers of startups' HQ relocation: before, during, and after the first VC investment

	I
Origin GDP capita	0.983*
	(0.009)
Origin Population	0.949***
	(0.006)
Origin Areakm2	0.895***
	(0.011)
Origin Urban	1.091*
	(0.054)
Origin Rural	0.665***
	(0.074)
Origin Sunshine Days	0.992***
	(0.002)
Origin Startup Birth	1.006***
	(0.001)
Origin Industrial Specialization	0.770**
	(0.095)
Total Assets (lagged)	1.032***
	(0.005)
Asset Growth (lagged)	1.045***
	(0.013)
Origin VC Hub	1.155***
	(0.044)
Origin HQ Graduates	0.994***
	(0.001)
Origin Patents	0.884***
	(0.025)
Origin EU Regional Expenditures	0.977***
	(0.004)
Pre VC	1.928***
	(0.075)
First VC Investment	2.765***

	(0.128)
Post VC	1.936***
	(0.069)
Year, Country and Industry FE	Yes
Observations	126,098
Companies	23,216
Migrations	5,797
$\chi 2$	3,623.9

*Legend. The Table reports Cox model exponentiated coefficients and, in parentheses, standard errors. The event of interest is the first relocation of the startup, during the first 10 years of its life. Data is right censored in 2023. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Figure 4: Relocation probability by age for VC-backed (VC obtained at age=2) and non-VC-backed startups



Legend. Relocation probabilities are derived from failure curves of Model I (see Table 4)

Third, we resorted to an instrumental variable approach to further address the potential endogeneity of the VC variable and estimated a two-stage control function model (Wooldridge, 2015). In the first stage (see Model 1 in Table 5), we modeled the probability of obtaining VC as a function of instrumental variables. We instrumented the *VC* variable with the following instruments that based on previous studies (e.g., Chemmanur, Krishnan, & Nandy 2011; Guo & Jiang, 2013; Nanda & Rhodes-Kopf, 2013; Chen & Ewens, 2025). *VC fundraising* is the yearly

amount of capital raised by VC investors in a given country from limited partners (LPs) and reflects supply-side shocks. Because of the local bias of VC investors (e.g., Chen et al., 2010; Chen & Ewens, 2025), startups are more likely to obtain VC if the VC investors located in their countries raise more funds from LPs. Conversely, VC fundraising should not have any direct effect on startups' inclination to move their HQs. *Acquisitions* is the number of majority acquisitions over the years in the country and industry of the focal startup. Acquisitions are an increasingly important exit for VC investors.[13] A booming acquisition market in the country and industry of a focal startup increases the likelihood that the startup obtains VC. Again, the acquisition market should not directly influence startups' relocation. The Wald test of exogeneity suggests that the VC dummy variable is indeed endogenous and that the use of an instrumental variable approach is justified. Furthermore, the Wald test of the strength of the instruments is equal to 127.11, well above the commonly agreed threshold of 10 (Staiger & Stock, 1997). Moreover, we run a test of the exclusion restriction, investigating whether the two instruments are correlated with the probability that non-VC-backed startups relocate their HQs. Table A8 reports the results of a Cox model restricted to non-VC-backed startups. relationship of the two instruments to relocation only for non-VC-backed firms. The coefficients of *VC Fundraising* and *Acquisitions* are small and not significant (p-value=0.885 and =0.750, respectively). In the second stage, we included the generalized residuals λ from the first stage regression as a control variable in the main relocation panel data Probit model (Model 2). The coefficient of λ is

[13] For example, in 2020 there were 886 acquisitions of VC-backed ventures in the U.S., and 103 IPOs, corresponding to a ratio of 8.6 to 1. Acquisitions accounted for 92 percent of annual VC-backed exits over the period 2004-2020. See NVCA, 2021.

positive and significant (1.339, p-value<0.01). Therefore, unobserved factors that increase the probability of a startup receiving VC are positively correlated with unobserved factors that increase its probability of migrating. This confirms the presence of endogeneity. In these estimates the *VC* variable loses its statistical significance. Therefore, while our findings indicate that there is a positive selection effect associated with VC affiliation, possibly because startups that manage to obtain VC have greater growth opportunities, unobserved by the econometrician, that make them more mobile, we remain agnostic as to whether receiving VC funding also has an additional, direct treatment effect on startups' migration probability.

Table 5: Drivers of startups' relocation: control function (CF) approach

	CF Probit First Stage (I)	CF Probit (II)
Acquisitions	1.001***	
	(0.000)	
VC Fundraising	1.087***	
	(0.021)	
λ		1.339***
		(0.092)
Origin GDP capita	1.018**	0.990*
	(0.009)	(0.005)
Origin Population	1.026***	0.980***
	(0.003)	(0.003)
Origin Areakm2	1.015**	0.954***
	(0.007)	(0.006)
Origin Urban	1.052*	1.058**
	(0.031)	(0.024)
Origin Rural	0.744***	0.809***
	(0.039)	(0.037)
Origin Sunshine Days	0.998	0.996***
	(0.001)	(0.001)
Origin Startup Birth	1.000	1.004***
	(0.001)	(0.001)
Origin Industrial Specialization	0.754***	0.845***
	(0.064)	(0.051)
Total Assets (lagged)	1.093***	1.034***
	(0.003)	(0.004)
Asset Growth (lagged)	1.145***	1.060***

	(0.005)	(0.009)
VC		0.828
		(0.099)
Origin VC Hub	1.355***	1.143***
	(0.038)	(0.025)
Origin HQ Graduates	1.003***	0.997***
	(0.001)	(0.001)
Origin Patents	1.123***	0.963**
	(0.019)	(0.015)
Origin EU Regional Expenditures	1.011***	0.990***
	(0.001)	(0.002)
Year, Country and Industry FE	Yes	Yes
Observations	125,135	125,135
$\chi 2$	6,463.6	3,967.3
Wald test of exogeneity $\chi^2(1)$		17.99***
Wald test of instruments		127.11***

*Legend. The Table reports CF Probit first stage and CF Probit models exponentiated coefficients and, in parentheses, standard errors. The event of interest is the first relocation of the startup, during the first 10 years of its life. Data is right censored in 2023. We use Wald tests to test exogeneity and instruments validity. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

4.2.Pull factors driving startups' choices of the destination of their HQ relocation

We show in Table 6 the results of the estimates of the conditional logit models of the startups' selection of the destination of their HQ relocations. The odds ratios significantly higher than 1 in Column I reveal that migrant startups are attracted by VC Hubs and NUTS3 areas with greater EU regional expenditures. Conversely, a higher patent stock in a given NUTS3 area decreases the probability that startups will choose this area as the destination of their HQ relocations. Lastly, the number of local graduates does not seem to make an area more or less attractive to startups relocating their HQs. Control variables reveal that startups prefer closer destinations, highly populated and larger NUTS3 areas, with higher GDP per capita, more sunny days, and greater startup density ($p<0.01$ for all these controls). Urban areas are also favored destinations ($p<0.01$).

In Column II, we include in the model specification the interaction terms between *VC* and the variables reflecting the resource endowments of NUTS3 areas. The aim is to test whether the associations of these latter variables with the probability that a given NUTS3 area be chosen as the destination of the HQ relocation differed between VC-backed and non-VC-backed startups. Except for the *VC x Destination graduates* interaction term, all the coefficients of the other interaction terms are significant ($p<0.01$), indicating that indeed there are significant differences between the choices of VC-backed and non-VC-backed firms. We report Wald tests of the null hypothesis that the coefficients of the resource endowment variables are not different from zero at the bottom of the table. VC hubs and areas with greater public financial support are attractive destinations for the HQ relocations of both VC-backed and non-VC-backed startups. The coefficients of these variables are significant ($p<0.01$) for both types of startups. Conversely, a given NUTS3 area's greater patent stock makes it less attractive for non-VC-backed startups ($p<0.01$), but not for VC-backed ones.

Table 6: Choice of the destination of HQ relocations

		I	II
α1	Destination GDP capita	1.030***	1.029***
		(0.009)	(0.009)
α2	Destination Population	1.047***	1.046***
		(0.003)	(0.003)
α3	Destination Areakm2	1.053***	1.056***
		(0.005)	(0.005)
α4	Destination Urban	1.061***	1.057***
		(0.017)	(0.017)
α5	Destination Rural	1.036	1.022
		(0.031)	(0.031)
α6	Destination Sunshine Days	1.016***	1.015***
		(0.001)	(0.001)
α7	Destination Startup Birth	1.017***	1.018***
		(0.001)	(0.001)
α8	Destination Industrial Specialization	0.972	0.961

		(0.032)	(0.031)
α9	Distance Origin-Destination (km)	0.992***	0.992***
		(0.000)	(0.000)
α10	Destination VC Hub	2.043***	1.641***
		(0.033)	(0.032)
α11	Destination HQ Graduates	0.999	0.999
		(0.001)	(0.001)
α12	Destination Patents	0.937***	0.879***
		(0.016)	(0.018)
α13	Destination EU Regional Expenditures	1.015***	1.007***
		(0.001)	(0.002)
α14	VC x Destination VC Hub		1.869***
			(0.059)
α15	VC x Destination HQ Graduates		0.999
			(0.002)
α16	VC x Destination Patents		1.161***
			(0.036)
α17	VC x Destination EU Regional Expenditures		1.024***
			(0.003)
	Observations	61,829	61,829
	Of which real relocation cases	5,797	5,797
	χ^2	5,790.3	5,919.2
	H0: α10+α14=0		1.121***
			(0.026)
	H0: α11+α15=0		-0.002
			(0.001)
	H0: α12+α16=0		0.019
			(0.027)
	H0: α13+α17=0		0.031***
			(0.002)

*Legend. The model shows the Conditional logit model exponentiated coefficients and in parenthesis standard errors. Results are obtained using 1,000 bootstrap simulations, with up to 10 random controls per case. We use Wald tests to test null hypotheses. Significance levels: * p<0.1 ** p<0.05 *** p<0.01*

In conditional logit models, it is not easy to interpret the magnitude of the results of the estimates.[14] For this purpose, we first computed the average marginal effects (AMEs) of the

[14] As with the fixed effects logit estimator, the conditional logit estimator βˆgives us the effect of each independent and control variable x_t on the log-odds ratio, log{Λ(x_t β+c)/[1-Λ(x_t β+c)] }. We cannot estimate the partial effects on the response probabilities unless we assume a certain value for c. Because the distribution of ci is unrestricted—in particular, E[ci] is not necessarily zero—one would not know what to provide for c. Furthermore, it is also not possible to estimate average partial effects, as doing so implies finding E[Λ(x_t β+c)], a task that requires

resource endowment variables on the log-odds ratios of the probability that the corresponding NUTS3 area be chosen as the destination of the HQ relocation, separately for VC-backed and non-VC-backed startups, based on the estimates reported in Column II of Table 6. We show the results in Table 7. The AMEs of *Destination VC Hub* and *Destination EU Regional Expenditures* are positive and significant ($p<0.01$). Still, their magnitudes are larger for VC-backed startups than for non-VC-backed ones (1.3 and 3.4 times as large, respectively). The AME of *Destination Patents* is negative and significant for non-VC-backed startups ($p<0.01$), but not significant for VC-backed ones. The AME of *Destination graduates* is not significant for both types of firms. Second, we replicated our estimates using fixed-effects linear probability models, with the same fixed effects and clustered standard errors as used in the main conditional logit models (as e.g., in Zhelyazkov & Tatarynowicz, 2021), and calculated how the predicted linear probability varies with the regressors. The estimates are similar to those reported in the text, with the exception of the *Destination Patent* variable (see Table A9 in the Appendix). Based on the results of the estimates of these linear probability models, Figure 5 illustrates how the probability that a given NUTS3 area is chosen by VC-backed and non-VC-backed startups as the destination of their HQ relocation varies with the values of the four resource endowment variables. The predicted probability that a VC hub is chosen as the HQ relocation destination is 1.1 and 0.6 times greater than that of other NUTS3 areas for VC-backed and non-VC-backed startups, respectively. When the *Destination EU Regional Expenditures* variable increases from the value corresponding to the 5th percentile of its distribution to the value corresponding to the 95th percentile, the

specifying a distribution for ci, that again we do not know. Hence, we can express our results only in terms of effects on the log of odds ratio (Wooldridge, 2010).

probability that the corresponding NUTS3 areas are chosen as HQ relocation destinations increases by 28 percent for VC-backed startups and 12 percent for their non-VC-backed peers. For these latter firms, the probability decreases by 15 percent when the *Destination Patents* variable increases from the 5th to the 95th percentiles. For VC-backed companies, the same increase in the *Destination Patents* variable leads to a 44 percent increase in the relocation probability. The relocation probabilities do not vary significantly with the *Destination Graduates* variable.

Table 7: Average Marginal Effects (AMEs) of the drivers of the choice of the HQ relocation destination for VC-backed and non-VC-backed startups

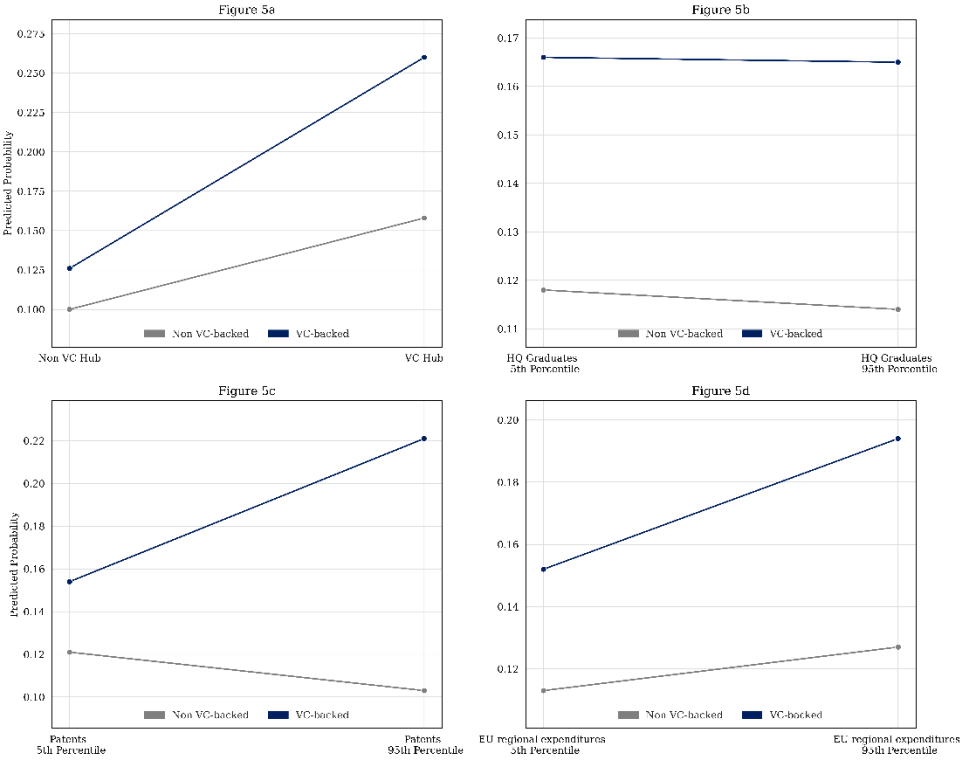
		AME
VC Hub	at VC = 0	0.496***
		(0.019)
	at VC = 1	1.121***
		(0.026)
HQ Graduates	at VC = 0	-0.001
		(0.001)
	at VC = 1	-0.002
		(0.001)
Patents	at VC = 0	-0.129***
		(0.020)
	at VC = 1	0.020
		(0.027)
Regional Expenditures	at VC = 0	0.007***
		(0.002)
	at VC = 1	0.031***
		(0.002)

*Legend. AMEs are computed based on Model II of Table 5. Standard deviations are in parentheses. Results are obtained using 1,000 bootstrap simulations, with up to 10 random controls per case. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

To test the robustness of our results, we repeated the estimates using the alternative *Talent Hub*, *Patent Hub*, and *EU Regional Payments* variables. We also modified the *VC hub* variable adopting three alternative definitions (top 15 by amount, top 30 and top 15 by number of

investments). The results, reported in Table A10 in the Appendix (Models I-VI), are consistent with our main findings. We also repeated the estimates using the full set of counterfactuals (see Table A11). Also in this case, results did not change.

Figure 5: Predicted probability of the HQ relocation destination choices of VC-backed and non-VC-backed startups at different values of VC Hub (5a), graduates (5b), patents (5c), and EU regional expenditures (5d)



Legend. Predicted probabilities are computed based on Model I of Table A9 in the Appendix.

Lastly, we focused on VC-backed startups and inserted a variable in the model specification measuring the distance between a focal NUTS3 area and the premise of the startups' lead VC investors (*Distance VC lead-Destination*). We identified lead investors using two criteria, as in e.g., Sorenson & Stuart (2008). In cases in which only one firm invested in the target company's first VC round, we considered it the lead investor. In cases in which the first VC round included multiple VC investors, we treated the VC that invested in the first round and

every subsequent round as the lead. In case two or more VC investors complied with this condition, we randomly chose one of them as the lead investor. Results of the estimates are reported in Table 7. The coefficient of *Distance VC lead-Destination* variable is positive and significant ($p<0.01$), revealing that VC-backed startups that relocate their HQs are inclined to move it closer to their lead investors' premises ($p<0.01$).

5. Conclusions

In this study, we have examined the within-country HQ relocations of a large sample of high-potential VC-backed and comparable non-VC-backed European startups in the first 10 years of their existence across small administrative areas (NUTS3). We have focused on how the local resource endowment of these areas differently influences the probability of HQ relocations of these two types of firms, and the choice of the destinations of their HQ relocations. We have estimated Cox survival data analysis model of the likelihood of migration, and case-control conditional logit models of the choice of the destinations of migrating startups. The econometric results show that there are similarities and differences in the relocation patterns of VC-backed and non-VC-backed startups. Independently of VC affiliation, startups are inclined to abandon locations that are poor in talents, innovative ideas, and public financial support. They also are likely to choose VC hubs and areas with generous public support as migration destinations, even though these effects are more pronounced for VC-backed startups. However, VC-backed startups are significantly more likely to migrate than their non-VC-backed counterparts after obtaining VC but also before, and relocate their HQs closer to their lead investors. They also are more likely to migrate to areas with a great stock of local innovative knowledge than non-VC-backed startups. These latter are more likely to migrate if they are initially located in a VC hub. These

findings highlight the critical role of VC affiliation in influencing startups migration patterns and of public support policies, like the EU Cohesion Policy, in making a location attractive to high-potential startups.

Table 7: VC-backed startups' choice of the destination of the HQ relocation: the role of the distance from the lead VC investors' premises

	I
Destination GDP capita	1.027*
	(0.014)
Destination Population	1.035***
	(0.003)
Destination Areakm2	1.045***
	(0.007)
Destination Urban	1.178***
	(0.027)
Destination Rural	0.706***
	(0.027)
Destination Sunshine Days	1.015***
	(0.001)
Destination Startup Birth	1.02***
	(0.001)
Destination Industrial Specialization	0.786***
	(0.039)
Distance Origin-Destination (km)	0.994***
	(0.000)
Destination VC Hub	2.974***
	(0.070)
Destination HQ Graduates	0.998*
	(0.001)
Destination Patents	0.928***
	(0.022)
Destination EU Regional Expenditures	1.036***
	(0.002)
Distance VC Lead-Destination (km)	0.999***
	(0.000)
Observations	33,070
Of which real relocation cases	3,139
χ^2	2,712.3

*Legend. We show conditional logit model exponentiated coefficients and, in parenthesis, standard errors. Results are obtained using 1,000 bootstrap simulations, with up to 10 random controls per case. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Our study makes several contributions to the entrepreneurship, entrepreneurial finance and economic geography literatures. First, it contributes to the literature on startup migration by investigating startups' within-country HQ relocations across small administrative areas. We highlighted the differences in migration flows between VC-backed and comparable, but non-VC-backed, startups, and how these flows are differently influenced by the local endowment of key resources: VC, public financial support, talents, and innovative knowledge. We also contribute to the literature on startup agglomeration. While this literature has primarily focused on local factors that promote startup birth (see Chen & Ewens, 2025, for an exception), we highlight local characteristics that influence the inflow and outflow of startups, influencing their agglomeration, and how their role differs between VC-backed and non-VC-backed startups. Lastly, we contribute to the VC literature by investigating the relation between startups' VC affiliation and their within-country mobility.

Our study has some limitations. First, on the positive relationship between VC affiliation and relocation, we investigated the potential endogeneity of VC funding with respect to relocation, but we did not find conclusive evidence of a direct treatment effect. We therefore remain agnostic as to whether VC funding causally induces relocation, a limitation partly due to the lack of a quasi-experimental setting like the legislative change used by Chen & Ewens (2025). Second, we do not examine the treatment effect of intra-country relocations on firms, which we leave as a direction for future research. We expect that relocation effects may differ depending on a company's VC affiliation and its location. Finally, although we control for numerous factors at the company and local levels, we do not account for the personal benefits of founders, which could introduce ambiguity to the results.

In spite of these limitations, our study has important implications for entrepreneurs, investors, and policymakers. For entrepreneurs and investors, our work shows that high-potential startups often migrate early in their lifecycle to improve the matching between the resources they need – especially the amount and type (private or public) of finance, and what the local ecosystem where they are founded offers them.

This implies that for policymakers, building an effective entrepreneurial ecosystem with an abundant supply of finance not only increases the birth rate of firms and the quality of newly created firms, but also makes an area more attractive for migrating high-potential (VC-backed and non-VC-backed) startups. Non-VC-backed startups are significantly less mobile; therefore, they might represent a target for an ad-hoc non-financial policy scheme. Ultimately, public support schemes, such as the EU Cohesion policy, emerge as critical levers that can be strategically deployed not only to retain promising native startups, but also to attract high-potential firms from elsewhere.

AKNOWLEDGMENTS

We acknowledge the financial support provided by the PRIN 2022 project “Digitization and the inclusiveness of entrepreneurial finance”, Prot. 2022Y3AWN5, financed by the Italian Ministry of University and Research, and the GRINS project, financed by PNRR (Piano Nazionale di Ripresa e Resilienza, Missione 4 (Infrastruttura e ricerca), Componente 2 (Dalla Ricerca all’Impresa), Investimento 1.3 (Partnership Estese), Tematica 9 (Sostenibilità economica e finanziaria di sistemi e territori)). The authors declare there are no other potential conflicts of interest.

REFERENCES

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, *32*(1), 15–30.

Agrawal, A., Cockburn, I., & McHale, J. (2006). Gone but not forgotten: Knowledge flows, labor mobility, and enduring social relationships. *Journal of Economic Geography*, *6*(5), 571–591. Oxford University Press.

Albouy, D., Ehrlich, G., & Liu, Y. (2016). *Housing demand, cost-of-living inequality, and the affordability crisis* (NBER Working Paper No. 22816). National Bureau of Economic Research.

Armour, J., & Cumming, D. J. (2006). The legislative road to Silicon Valley. *Oxford Economic Papers*, *58*(4), 596–635.

Audretsch, D. B., & Feldman, M. P. (1996). R&D Spillovers and the Geography of Innovation and Production. *The American Economic Review*, *86*(3), 630–640.

Audretsch, D. B., & Keilbach, M. (2007). The theory of knowledge spillover entrepreneurship. *Journal of Management Studies*, *44*(7), 1242–1253.

Audretsch, D. B., & Keilbach, M. (2008). Resolving the knowledge paradox: knowledge-spillover entrepreneurship and economic growth. *Research Policy*, *37*(10), 1697–1705.

Bauluz, L., Bukowski, P., Fransham, M., Lee, A., López Forero, M., Novokmet, F., Breau, S., Lee, N., Malgouyres, C., Schularick, M., & Verdugo, G. (2023). *Spatial wage inequality in North America and Western Europe: changes between and within local labour markets 1975-2019* (Kiel Working Paper No. 2253). Kiel Institute for the World Economy.

Baum, J. A. C., & Silverman, B. S. (2004). Picking winners or building them? Alliance, intellectual, and human capital as selection criteria in venture financing and performance of biotechnology startups. *Journal of Business Venturing*, *19*(3), 411–436.

Belsley, D.A., Kuh, E. and Welsch, R.E. (2005) Regression Diagnostics: Identifying Influential Data and Sources of Collinearity. John Wiley & Sons, Hoboken.

Bertoni, F., & Martì, J. (2011). Financing Entrepreneurial Ventures in Europe The VICO dataset. Retrieved from http://ssrn.com/abstract=1904297

Blackwell, M., Iacus, S., King, G., & Porro, G. (2009). *cem: Coarsened exact matching in Stata*. *The Stata Journal* (Vol. 9).

Brush, C. G., Edelman, L. F., & Manolova, T. S. (2008). The effects of initial location, aspirations, and resources on likelihood of first sale in nascent firms. *Journal of Small Business Management*, *46*(2), 159–182.

Bruton, G. D., Fried, V. H., & Manigart, S. (2005). Institutional influences on the worldwide expansion of venture capital. *Entrepreneurship Theory and Practice*, *29*(6), 737–760.

Bryan, K. A., Guzman, J. (2023). Entrepreneurial migration. The Review of Economics and Statistics 2023; doi: https://doi.org/10.1162/rest_a_01381

Burnell, D., Stevenson, R., & Fisher, G. (2023). Early-stage business model experimentation and pivoting. *Journal of Business Venturing*, 38(4), 106314.

Cameron, A. C. , & Trivedi, P. K. (2005). *Microeconometrics: Methods and Applications*. Cambridge: Cambridge University Press.

Carlino, G. & Kerr, W.R. (2015). Agglomeration and innovation, in: Duranton, G, Henderson, J.V. & Strange W.C. eds, *Handnìbook of Regional and Urban Economics*, Vol. 5, 3489-404, Elsevier Amsterdam.

Chemmanur, T. J., Krishnan, K., & Nandy, D. K. (2011). How Does Venture Capital Financing Improve Efficiency in Private Firms? A Look Beneath the Surface. *SSRN Electronic Journal*. Elsevier BV.

Chen, J., & Ewens, M. (2025). Venture capital and startup agglomeration. *The Journal of Finance*, *80*(4), 2153–2198.

Chen, H., Gompers, P., Kovner, A., & Lerner, J. (2010). Buy local? The geography of venture capital. *Journal of Urban Economics*, *67*(1), 90–102.

Choi, J., Goldschlag, N., Haltiwanger, J. C., & Kim, J. D. (2025). Early joiners and startup performance. *The Review of Economics and Statistics*, *107*(4), 1157–1202.

Colombo, M. G., D'Adda, D., & Quas, A. (2019). The geography of venture capital and entrepreneurial ventures' demand for external equity. *Research Policy*, *48*(5), 1150–1170. Elsevier B.V.

Conti, A., & Guzman, J. A. (2023). What is the us comparative advantage in entrepreneurship? evidence from Israeli migration to the United States. *Review of Economics and Statistics*, *105*(3), 528–544.

Cox, D. R. (1972). Regression Models and Life-Tables. *Journal of the Royal Statistical Society. Series B (Methodological)*, *34*(2), 187–220.

Crescenzi, R., & Giua, M. (2019). One or many Cohesion Policies of the European Union? On the differential economic impacts of Cohesion Policy across member states. *Regional Studies*, *54*(1), 10–20. https://doi.org/10.1080/00343404.2019.1665174

Crescenzi, R., & Rodriguez-Pose, A. (2011). Innovation In an Integrated Framework: A Europe-United States Comparative Analysis. *Advances in Spatial Science* (pp. 83–114). Springer.

Cumming, D., & Dai, N. (2010). Local bias in venture capital investments. *Journal of Empirical Finance*, *17*(3), 362–380.

Cumming, D., Fleming, G., & Schwienbacher, A. (2009). Corporate relocation in venture capital finance. *Entrepreneurship Theory and Practice*, *33*(5), 1121–1155

Dahl, M. S., & Sorenson, O. (2012). Home sweet home: Entrepreneurs' location choices and the performance of their ventures. *Management Science*, *58*(6), 1059–1071.

Delgado, M., Porter, M. E., & Stern, S. (2010). Clusters and entrepreneurship. *Journal of Economic Geography*, *10*(4), 495–518.

DeSantola, A., & Gulati, R. (2017). Scaling: Organizing and growth in entrepreneurial ventures. *Academy of Management Annals*, *11*(2), 640–668.

Van Dijk, J., & Pellenbarg, P. H. (2000). Firm relocation decisions in The Netherlands: An ordered logit approach. *Papers in Regional Science*, *79*(2), 191–219.

Döring, T., & Schnellenbach, J. (2006). What do we know about geographical knowledge spillovers and regional growth? A survey of the literature. *Regional Studies*, *40*(3), 375–395.

Figueiredo, O., Guimarães, P., & Woodward, D. (2002). *Home-field advantage: location decisions of Portuguese entrepreneurs*. *Journal of Urban Economics* (Vol. 52).

Garcilazo, E., Moreno-Monroy, A. I., & Oliveira Martins, J. (2021). Regional inequalities and contributions to aggregate growth in the 2000s: An EU vs US comparison based on functional regions. *Oxford Review of Economic Policy*, *37*(1), 70–96.

Glaeser, E. L., & Kerr, W. R. (2009). Local industrial conditions and entrepreneurship: How much of the spatial distribution can we explain? *Journal of Economics & Management Strategy*, *18*(3), 623–663.

Gompers, Paul, and Josh Lerner. 2001. The Venture Capital Revolution. *Journal of Economic Perspectives,* 15(2), 145–168**.**

Gompers, P. A., Gornall, W., Kaplan, S. N., & Strebulaev, I. A. (2020). How do venture capitalists make decisions? *Journal of Financial Economics*, *135*(1), 169–190.

Gorman, M. & Sahlman, W. A. (1989), What do venture capitalists do?, *Journal of Business Venturing*, 4(4), 231-248.

Guzman, J. (2024). Go West Young Firm: The Impact of Startup Migration on the Performance of Migrants. *Management Science*, *70*(7), 4824–4846. INFORMS Inst.for Operations Res.and the Management Sciences.

Guzman, J., & Stern, S. (2020). The state of American entrepreneurship: New estimates of the quantity and quality of entrepreneurship for 32 US states, 1988–2014. *American Economic Journal: Economic Policy*, *12*(4), 212–243.

Jaffe, A. B., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *The Quarterly Journal of Economics*, *108*(3), 577–598.

Jenkins, S. P. (1995). Easy Estimation Methods for Discrete-Time Duration Models. *Oxford Bulletin of Economics and Statistics*, *57*(1), 129–136.

Kerr, W. R., & Robert-Nicoud, F. (2020). Tech clusters. *Journal of Economic Perspectives*, *34*(3), 50–76.

Kortum, S., & Lerner, J. (2000). Assessing the Contribution of Venture Capital to Innovation. *The RAND Journal of Economics*, *31*(4), 674–692.

Kronenberg, K. (2013). Firm relocations in the Netherlands: Why do firms move, and where do they go? *Papers in Regional Science*, *92*(4), 691–713.

Lee, I. H. (2022). Startups, relocation, and firm performance: a transaction cost economics perspective. *Small Business Economics*, *58*(1), 205–224. Springer.

Lerner, J. 2009. Boulevard of broken dreams: why public efforts to boost entrepreneurship and venture capital have failed – and what to do about it, Princeton, NJ., Princeton University Press.

Leung, A. (2003). Different ties for different needs: Recruitment practices of entrepreneurial firms at different developmental phases. *Human Resource Management*, *42*(4), 303–320.

Li, Y., & Zahra, S. A. (2012). Formal institutions, culture, and venture capital activity: A cross-country analysis. *Journal of Business Venturing*, *27*(1), 95–111.

Marré, A. W., & Rupasingha, A. (2020). School quality and rural in-migration: Can better rural schools attract new residents? *Journal of Regional Science*, *60*(1), 156–173. Blackwell Publishing Inc.

McFadden, D. L. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in econometrics* (pp. 105–142). Academic Press.

Michelacci, C., & Silva, O. (2007). Why so many local entrepreneurs? *The Review of Economics and Statistics*, *89*(4), 615–633.

Oster, E. (2017). Unobservable Selection and Coefficient Stability: Theory and Evidence. *Journal of Business & Economic Statistics*, *37*(2), 187–204.

Pellenbarg, P. H., van Wissen, L. J. G., & van Dijk, J. (2002). Firm relocation: state of the art and research prospects. University of Groningen, SOM research school.

De Prijcker, S., Manigart, S., Collewaert, V., & Vanacker, T. (2019). Relocation to Get Venture Capital: A Resource Dependence Perspective. *Entrepreneurship: Theory and Practice*, *43*(4), 697–724. SAGE Publications Ltd.

Puri, M., & Zarutskie, R. (2012). On the life cycle dynamics of venture-capital- and non-venture-capital-financed firms. *The Journal of Finance*, *67*(6), 2247–2293.

Roach, M., & Sauermann, H. (2024). Can technology startups hire talented early employees? Ability, preferences, and employee first job choice. *Management Science*, *70*(6), 3315–3336.

Rubin, D.B. Using Propensity Scores to Help Design Observational Studies: Application to the Tobacco Litigation. Health Services & Outcomes Research Methodology 2, 169–188 (2001). https://doi.org/10.1023/A:1020363010465

Sauermann, H. (2018). Fire in the belly? Employee motives and innovative performance in start-ups vs. established firms. *Strategic Entrepreneurship Journal*, *12*(4), 423–454.

Shi, Y., Sorenson, O., & Waguespack, D. M. (2024). The new argonauts: The international migration of venture-backed companies. *Strategic Management Journal*, *45*(8), 1485–1509. John Wiley and Sons Ltd.

Sorenson, O., & Stuart, T.E. (2008). Bringing the Context Back In: Settings and the Search for Syndicate Partners in Venture Capital Investment Networks. *Administrative Science Quarterly*, 53: 266–294. DOI: 10.2189/asqu.53.2.266

Staiger, D., & Stock, J. H. (1997). Instrumental Variables Regression with Weak Instruments. *Econometrica*, *65*(3), 557–586. https://doi.org/10.2307/2171753

Stam, E. (2007). Why butterflies don't leave: Locational behavior of entrepreneurial firms. *Economic Geography*, *83*(1), 27–50.

Stam, E., & Spigel, B. (2018). Entrepreneurial ecosystems. In R. Blackburn, D. De Clercq, & J. Heinonen (Eds.), *The SAGE handbook of small business and entrepreneurship* (pp. 407–422). SAGE Publications.

Stam, E., & van de Ven, A. (2021). Entrepreneurial ecosystem elements. *Small Business Economics*, *56*(2), 809–832.

Weik, S., Achleitner, A. K., & Braun, R. (2024). Venture capital and the international relocation of startups. *Research Policy*, *53*(7). Elsevier B.V.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section and Panel Data* (2nd ed., Vol. 1). MIT Press Books, The MIT Press.

Wooldridge, J. M. 2015. Control function methods in applied econometrics. Journal of Human Resources 50: 420–445. https://doi.org/10.3368/jhr.50.2.420

APPENDIX

Table A1. Balancing Properties of the Unmatched and Matched Samples

Sample	Ps R2	LR chi2	p>chi2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.107	17955.18	0.000	11.7	7.6	79.1*	1.11	100
Matched	0.009	133.83	0.000	3	1.4	22.9	1.19	67

Table A2: Data sources for headquarter relocations

Country	NUTS3 Equivalent Local Entity	Data Source
Czech Republic	Kraje	Ministry of Justice
Denmark	Landsdele	Danish Business Register
France	Departments	Sirene INSEE
Germany	Kreis	Orbis (Handelsregister)
Italy	Province	AIDA (Infocamere)
Netherlands	COROP	Orbis (Kamer van Koophandel)
United Kingdom	Counties	Companies House

Table A3: Top 30 NUTS3 areas by outflowing relocation rate

Rank	NUTS3	NUTS3 Name	Outflowing Relocation Rate	N. Outflowing
1	DEA22	Bonn	3.96	6
2	DE21L	Starnberg	3.36	4
3	DEA27	Rhein-Erft-Kreis	3.30	5
4	ITC4D	Monza e della Brianza	2.74	5
5	ITF47	Bari	2.61	5
6	ITF35	Salerno	2.35	3
7	DEA52	Dortmund	2.31	5
8	ITG17	Catania	2.31	4
9	NL333	Delft en Westland	2.26	11
10	FR105	Hauts-de-Seine	2.23	68
11	NL337	Agglom. Leiden en Bollenstreek	2.22	8
12	ITC41	Varese	2.19	3
13	ITI14	Firenze	2.19	6
14	FR104	Essonne	2.15	24
15	DE712	Frankfurt am Main	2.11	21
16	FR108	Val-d'Oise	2.10	8
17	NL332	Agglomeratie's-Gravenhage	2.10	14
18	ITI31	Pesaro e Urbino	1.99	2

19	DEE03	Magdeburg	1.98	3
20	DEA2C	Rhein-Sieg-Kreis	1.98	3
21	NL412	Midden-Noord-Brabant	1.96	6
22	FR107	Val-de-Marne	1.92	25
23	ITH34	Treviso	1.92	7
24	DE21H	Munchen	1.88	13
25	DE111	Stuttgart	1.85	9
26	NL324	Agglomeratie Haarlem	1.85	4
27	FR103	Yvelines	1.80	23
28	NL327	Het Gooi en Vechtstreek	1.79	11
29	DEA1E	Viersen	1.73	3
30	NL33A	Zuidoost-Zuid-Holland	1.73	5

Table A4: Top 30 NUTS3 areas by inflowing relocation rate

Rank	NUTS3	NUTS3 Name	Inflowing Relocation Rate	N. Inflowing
1	DE71A	Main-Taunus-Kreis	6.72	8
2	CZ020	Stredocesky kraj	3.84	4
3	NL324	Agglomeratie Haarlem	3.23	7
4	UKM84	North Lanarkshire	2.82	11
5	DE232	Regensburg	2.77	3
6	DE933	Harburg	2.77	3
7	FR105	Hauts-de-Seine	2.63	80
8	DEA52	Dortmund	2.31	5
9	DE115	Ludwigsburg	2.31	3
10	DE112	Boblingen	2.31	4
11	FR107	Val-de-Marne	2.31	30
12	UKD71	East Merseyside	2.30	22
13	FRD13	Orne	2.22	3
14	ITC33	Genova	2.19	2
15	DEA1C	Mettmann	2.17	4
16	DE254	Nurnberg	2.13	6
17	FR108	Val-d'Oise	2.10	8
18	ITF33	Napoli	2.09	12
19	NL221	Veluwe	2.05	10
20	UKG21	Telford and Wrekin	2.05	8
21	FRL06	Vaucluse	2.04	6
22	NL33B	Oost-Zuid-Holland	2.02	4
23	FRK23	Drome	1.97	7
24	CZ064	Jihomoravsky kraj	1.95	5
25	NL332	Agglomeratie's-Gravenhage	1.95	13
26	ITH20	Trento	1.93	3

27	FRG04	Sarthe	1.92	4
28	FRI23	Haute-Vienne	1.92	4
29	UKG38	Walsall	1.88	14
30	DK012	Kobenhavns omegn	1.87	55

Table A5: Drivers of startups' relocation (Discrete-time survival models)

	Probit (I)	Probit (II)
Origin GDP capita	0.986**	0.987**
	(0.005)	(0.005)
Origin Population	0.975***	0.976***
	(0.003)	(0.003)
Origin Areakm2	0.953***	0.952***
	(0.006)	(0.006)
Origin Urban	1.053**	1.046*
	(0.024)	(0.024)
Origin Rural	0.837***	0.845***
	(0.038)	(0.038)
Origin Sunshine Days	0.996***	0.996***
	(0.001)	(0.001)
Origin Startup Birth	1.004***	1.004***
	(0.001)	(0.001)
Origin Industrial Specialization	0.876**	0.883**
	(0.053)	(0.053)
Total Assets (lagged)	1.021***	1.021***
	(0.003)	(0.003)
Asset Growth (lagged)	1.036***	1.036***
	(0.007)	(0.007)
VC	1.364***	1.473***
	(0.022)	(0.037)
Origin VC Hub	1.095***	1.135***
	(0.022)	(0.025)
Origin HQ Graduates	0.997***	0.997***
	(0.001)	(0.001)
Origin Patents	0.944***	0.956**
	(0.014)	(0.017)
Origin EU Regional Expenditures	0.990***	0.990***
	(0.002)	(0.002)
VC x Origin VC Hub		0.888***
		(0.031)
VC x Origin HQ Graduates		0.999
		(0.001)
VC x Origin Patents		0.974
		(0.020)

VC x Origin EU Regional Expenditures	0.998	
		(0.003)
Age	Yes	Yes
Year FE	Yes	Yes
Country FE	Yes	Yes
Industry FE	Yes	Yes
Observations	126,098	126,098
$\chi 2$	3,940.8	3,952.9

*The table shows Probit models exponentiated coefficients and, in parenthesis, standard errors. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Table A6: Drivers of startups' relocation (robustness tests)

	I	II	III	IV	V	VI
Origin GDP capita	0.973***	0.985	0.982**	0.982*	0.983*	0.983*
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Origin Population	0.953***	0.955***	0.951***	0.957***	0.959***	0.958***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Origin Areakm2	0.892***	0.891***	0.889***	0.893***	0.885***	0.891***
	(0.011)	(0.012)	(0.011)	(0.011)	(0.011)	(0.012)
Origin Urban	1.095*	1.081	1.061	1.073	1.035	1.066
	(0.054)	(0.053)	(0.052)	(0.054)	(0.051)	(0.054)
Origin Rural	0.647***	0.678***	0.650***	0.661***	0.668***	0.665***
	(0.073)	(0.076)	(0.073)	(0.074)	(0.075)	(0.074)
Origin Sunshine Days	0.991***	0.992***	0.991***	0.991***	0.991***	0.991***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Origin Startup Birth	1.005***	1.005***	1.007***	1.008***	1.008***	1.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Origin Industrial Specialization	0.776**	0.787*	0.780**	0.789*	0.788*	0.785**
	(0.095)	(0.097)	(0.096)	(0.097)	(0.097)	(0.097)
Total Assets (lagged)	1.032***	1.031***	1.032***	1.032***	1.032***	1.032***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Asset Growth (lagged)	1.064***	1.063***	1.063***	1.063***	1.064***	1.063***
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
VC	2.285***	2.064***	2.096***	2.050***	2.231***	2.060***
	(0.124)	(0.098)	(0.098)	(0.088)	(0.105)	(0.089)
Origin VC Hub	1.340***	1.306***	1.334***			
	(0.061)	(0.060)	(0.060)			
Origin HQ Graduates		0.995***	0.995***	0.994***	0.994***	0.994***
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Origin Patents	0.941*		0.910***	0.872***	0.908***	0.892***
	(0.031)		(0.031)	(0.031)	(0.031)	(0.032)
Origin EU Regional Expenditures	0.979***	0.976***		0.975***	0.976***	0.976***
	(0.004)	(0.004)		(0.004)	(0.004)	(0.004)
VC X Origin VC Hub	0.747***	0.783***	0.757***			
	(0.050)	(0.054)	(0.050)			
VC X Origin HQ Graduates		1.000	0.999	1.000	0.999	1.000
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
VC X Origin Patents	0.976		0.960	1.030	0.990	1.012
	(0.037)		(0.035)	(0.042)	(0.036)	(0.041)

VC X Origin EU Regional Expenditures	1.003	1.002		1.002	0.999	1.001
	(0.006)	(0.006)		(0.006)	(0.006)	(0.006)
Origin HQ Graduates Hub	0.929*					
	(0.035)					
VC X Origin HQ Graduates Hub	0.842***					
	(0.051)					
Origin Patents Hub		0.922				
		(0.068)				
VC X Origin Patents Hub		0.863*				
		(0.072)				
Origin EU Regional Payments			0.980***			
			(0.004)			
VC X Origin EU Regional Payments			1.001			
			(0.006)			
Origin VC Hub (Top 15)				1.429***		
				(0.081)		
VC X Origin VC Hub (Top 15)				0.625***		
				(0.050)		
Origin VC Hub (Top 30 by N. Investments)					1.246***	
					(0.057)	
VC X Origin VC Hub (Top 30 by N. Investments)					0.658***	
					(0.043)	
Origin VC Hub (Top 15 by N. Investments)						1.341***
						(0.081)
VC X Origin VC Hub (Top 15 by N. Investments)						0.658***
						(0.053)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	126,098	126,098	126,098	126,098	126,098	126,098
Companies	23,216	23,216	23,216	23,216	23,216	23,216
Migrations	5,797	5,797	5,797	5,797	5,797	5,797
$\chi 2$	3,338.7	3,341.7	3,339.0	3,351.9	3,350.1	3,339.1

*The model shows Cox model exponentiated coefficients and, in parenthesis, standard errors. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Table A7: Robustness test to assess the influence of unobservables on the startups' relocation: Oster(2019) bounding method

Model I: Baseline with fixed effects of age, year, country, industry (N=23,216)	
VC	0.059***
	(0.003)
Model II: Full Model (N=23,216)	
VC	0.055***
	(0.003)

R2 Baseline	0.062
R2 Full Model	0.065
R2 Max	0.085
β∗ (lower bound)	0.026
δ (for β∗ = 0)	1.745

Notes: In this table, we implement the Oster (2019) bounding method to compute a lower bound for the VC funding effects on relocation. R_{max}, the R-squared from a hypothetical regression of the relocation on the treatment and both observed and unobserved controls, is calculated as $1.3R\tilde{}$, where $R\tilde{}$ (R2 Full Model) is the R-squared from our main controlled model, as suggested by Oster (2019). The small R2 values are due to having a binary outcome variable rather than the low fit of the observables. The baseline specification controls only for fixed effects of age, year, country, industry, while the expanded specification includes all the controls and explanatory variables of the main model. As shown, the lower bounds (β) of our estimate is above zero. Moreover, the reported measure, δ, for the relative degree of selection on observed and unobserved variables suggests that the influence of the unobservables relative to the observables would need to be over 1.7 times larger to produce a null VC funding effect. Standard errors are reported in parenthesis. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.

Table A8: Drivers of startups' relocation (non-VC-backed only)

	I
Acquisitions	1.000
	(0.000)
VC Fundraising	1.035
	(0.113)
Origin GDP capita	0.969*
	(0.017)
Origin Population	0.969***
	(0.010)
Origin Areakm2	0.872***
	(0.017)
Origin Urban	1.019
	(0.072)
Origin Rural	0.684**
	(0.102)
Origin Sunshine Days	0.988***
	(0.003)
Origin Startup Birth	1.011***
	(0.002)
Origin Industrial Specialization	0.847
	(0.158)
Total Assets (lagged)	1.015**
	(0.008)
Asset Growth (lagged)	1.073***
	(0.023)
VC	

Origin VC Hub	1.198***
	(0.070)
Origin HQ Graduates	0.994***
	(0.002)
Origin Patents	0.886**
	(0.045)
Origin EU Regional Expenditures	0.982***
	(0.005)
Year FE	Yes
Country FE	Yes
Industry FE	Yes
Observations	80,415
Companies	13,440
Migrations	2,653
$\chi 2$	1,444.1
p-value: Acquisitions	0.885
p-value: VC Fundraising	0.750

*The model shows Cox model exponentiated coefficients and, in parenthesis, standard errors. Significance levels: * p<0.1 ** p<0.05 *** p<0.01.*

Table A9: Choice of the destination of relocations (linear probability model)

	I
Destination GDP capita	0.0128***
	(0.0019)
Destination Population	0.0036***
	(0.0002)
Destination Areakm2	-0.001**
	(0.0004)
Destination Urban	0.0053***
	(0.0011)
Destination Rural	-0.0019
	(0.0013)
Destination Sunshine Days	0.0007***
	(0.0000)
Destination Startup Birth	0.003***
	(0.0001)
Destination Industrial Specialization	0.0028
	(0.0024)
Distance Origin-Destination (km)	-0.0002***
	(0.0000)
Destination VC Hub	0.0576***
	(0.0021)

Destination HQ Graduates	-0.0002
	(0.0001)
Destination Patents	-0.0084***
	(0.0028)
Destination EU Regional Expenditures	0.0009***
	(0.0001)
VC X Destination VC Hub	0.0763***
	(0.0040)
VC X Destination HQ Graduates	0.0001
	(0.0002)
VC X Destination Patents	0.0396***
	(0.0054)
VC X Destination EU Regional Expenditures	0.0019***
	(0.0003)
Constant	-0.0321***
	(0.0060)
Observations	61,829
Of which real migration cases	5,797
F	129.4

*The model shows the linear probability model coefficients and in parenthesis standard errors. Results are obtained using 1,000 bootstrap simulations, with up to 10 random controls per case. Significance levels: * p<0.1 ** p<0.05 *** p<0.01*

Table A10: Choice of the destination of relocations (robustness tests)

	I	II	III	IV	V	VI
Destination GDP capita	1.025***	1.037***	1.030***	1.026***	1.031***	1.029***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Destination Population	1.041***	1.055***	1.045***	1.071***	1.033***	1.061***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Destination Areakm2	1.053***	1.048***	1.056***	1.046***	1.048***	1.055***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Destination Urban	1.043**	1.064***	1.057***	1.084***	1.016	1.116***
	(0.017)	(0.017)	(0.017)	(0.018)	(0.017)	(0.019)
Destination Rural	1.061**	1.037	1.022	1.065**	1.052	1.075**
	(0.032)	(0.031)	(0.031)	(0.033)	(0.033)	(0.033)
Destination Sunshine Days	1.015***	1.015***	1.015***	1.009***	1.013***	1.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Destination Startup Birth	1.016***	1.019***	1.018***	1.021***	1.016***	1.018***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Destination Industrial Specialization	0.991	0.944*	0.961	1.000	1.020	1.076**
	(0.033)	(0.031)	(0.031)	(0.032)	(0.033)	(0.034)
Distance Origin-Destination (km)	0.992***	0.992***	0.992***	0.991***	0.992***	0.991***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Destination VC Hub	1.659***	1.660***	1.643***			
	(0.032)	(0.032)	(0.032)			
Destination HQ Graduates		0.999	0.999	0.998**	0.999	0.998*
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)

Destination Patents	0.882***		0.879***	0.865***	0.896***	0.865***
	(0.018)		(0.018)	(0.019)	(0.018)	(0.018)
Destination EU Regional Expenditures	1.007***	1.008***		1.004**	1.005***	1.006***
	(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
VC X Destination VC Hub	1.870***	1.929***	1.857***			
	(0.059)	(0.065)	(0.059)			
VC X Destination HQ Graduates		0.999	0.999	0.997	0.998	0.997*
		(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
VC X Destination Patents	1.134***		1.164***	1.17***	1.155***	1.261***
	(0.034)		(0.036)	(0.041)	(0.036)	(0.042)
VC X Destination EU Regional Expenditures	1.024***	1.025***		1.015***	1.024***	1.016***
	(0.003)	(0.003)		(0.003)	(0.003)	(0.003)
Destination HQ Graduates Hub	1.112***					
	(0.016)					
VC X Destination HQ Graduates Hub	1.019***					
	(0.030)					
Destination Patents Hub		0.643***				
		(0.022)				
VC X Destination Patents Hub		1.290***				
		(0.071)				
Destination EU Regional Payments			1.007***			
			(0.002)			
VC X Destination EU Regional Payments			1.021***			
			(0.003)			
Destination VC Hub (Top 15)				1.335***		
				(0.034)		
VC X Destination VC Hub (Top 15)				1.810***		
				(0.076)		
Destination VC Hub (Top 30 by N. Investments)					1.774***	
					(0.037)	
VC X Destination VC Hub (Top 30 by N. Investments)					2.031***	
					(0.068)	
Destination VC Hub (Top 15 by N. Investments)						1.600***
						(0.044)
VC X Destination VC Hub (Top 15 by N. Investments)						1.480***
						(0.061)
Observations	61,829	61,829	61,829	61,829	61,829	61,829
Of which real migration cases	5,797	5,797	5,797	5,797	5,797	5,797
χ^2	5,930.7	5,933.7	5,916.8	5,720.9	6,010.2	5,727.5

*The model shows the Conditional logit model exponentiated coefficients and in parenthesis standard errors. Results are obtained using 1,000 bootstrap simulations, with up to 10 random controls per case. Significance levels: * p<0.1 ** p<0.05 *** p<0.01*

Table A11: Choice of the destination of relocations (considering all counterfactuals)

	Model I	Model II
Destination GDP capita	1.033***	1.034***
	(0.010)	(0.010)
Destination Population	1.042***	1.039***
	(0.007)	(0.007)
Destination Areakm2	1.053***	1.055***
	(0.015)	(0.015)
Destination Urban	1.064	1.060
	(0.056)	(0.056)
Destination Rural	1.085	1.069
	(0.121)	(0.120)
Destination Sunshine Days	1.015***	1.013***
	(0.003)	(0.003)
Destination Startup Birth	1.016***	1.016***
	(0.001)	(0.001)
Destination Industrial Specialization	0.967	0.955
	(0.079)	(0.078)
Distance Origin-Destination (km)	0.991***	0.991***
	(0.000)	(0.000)
Destination VC Hub	2.095***	1.676***
	(0.083)	(0.080)
Destination HQ Graduates	0.999	0.999
	(0.001)	(0.001)
Destination Patents	0.931**	0.881***
	(0.029)	(0.033)
Destination EU Regional Expenditures	1.015***	1.008
	(0.004)	(0.005)
VC x Destination VC Hub		1.919***
		(0.139)
VC x Destination HQ Graduates		0.999
		(0.002)
VC x Destination Patents		1.137***
		(0.049)
VC x Destination EU Regional Expenditures		1.022***
		(0.009)
Observations	381,888	381,888
Of which real relocation cases	5,797	5,797
χ^2	6,695.0	6,865.5

*The model shows the Conditional logit model exponentiated coefficients and in parenthesis standard errors. The model considers all the counterfactuals. Significance levels: * p<0.1 ** p<0.05 *** p<0.01*