

# Building a space entrepreneurship industry: The role of entrepreneurial support programs for startup growth

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**Abstract:** Given their relevance to the development of the entrepreneurship industry, several studies have investigated the structure, emergence, and effects on firm-level performance of entrepreneurial support organizations (ESOs). However, to date we possess limited knowledge on the effect of their tailored entrepreneurial support programs (ESPs) on startup growth, particularly in nascent settings. Drawing on signaling and learning theoretical mechanisms, we develop hypotheses to examine how sector-specific ESAs, backed by a high-status partner, influence startup growth in the nascent setting of the (new) space economy. We test our hypotheses on a unique dataset of 1043 space startups observed over the years 2005–2022, 357 of which were supported by the ESA BIC program—a sector-specific ESP sponsored by the European Space Agency and delivered through local ESOs across Europe. The empirical results show that supported startups, compared to their unsupported counterparts, experienced higher growth in total assets both during the program and afterwards, and higher growth in employment during the program, but not afterwards. We observe no significant differences in turnover growth. Furthermore, supported startups have a higher likelihood of attracting Venture Capital funding. These findings advance our understanding of the emerging space entrepreneurship industry, offering implications for both theory and practice.

**Plain English Summary:** Most studies on entrepreneurial support organizations (ESOs) have looked at how they are set up and developed, but not many have checked how well their support programs (ESPs) actually help startups grow and build new industries. In this study, we examined how ESAs that focus on specific sectors can affect startup growth. We tested our hypotheses using data from 1043 space startups, 357 of which were supported through the European Space Agency Business Incubation Centres program. Our results show that supported startups experience higher growth in total assets both during the program and after it ended compared to their unsupported counterparts. Furthermore, they experience higher growth in employment, but only during the program. Conversely, we observe no significant differences in turnover growth, either during or after the program. Finally, supported startups have a greater likelihood of attracting Venture Capital funding.

These findings shed new light on how ESPs can foster the growth of startups, providing useful recommendations for both researchers and practitioners in helping them make better decisions about how to support startups in specific nascent settings.

**Keywords:** Entrepreneurship industry; Entrepreneurial support organizations; Space economy; Startups; Incubators; Growth; Venture Capital

**JEL:** L26; O14

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**Data Availability.** The datasets generated and/or analyzed during the current study are available upon request to Alessandro Lucini Paioni. The list of supported startups can be openly consulted at the link provided in footnote 4.

**Competing interests:** The authors declare no competing interests.

## 1. Introduction

In the last few decades, we have witnessed a proliferation of entrepreneurial support organizations (ESOs) (Ratinho et al., 2020; Theodoraki et al., 2018), whose primary focus is to support individuals and collectives in their entrepreneurial process through (in)direct, (im)material assistance (Bergman & McMullen, 2022). They include incubators, accelerators, and science parks, among others (Cohen et al., 2019b; Sansone et al., 2020). Scholars have recently started to regard support for entrepreneurship as an industry of its own, i.e. an entrepreneurship industry, defined as “*the goods and services explicitly intended for opportunity discovery and development by current and prospective entrepreneurs*” (Hunt & Kiefer, 2017, p.233). This notion has led to a renewed interest in investigating the effectiveness of ESOs in supporting the development of startups.

Studies on whether ESOs foster startup growth offer mixed evidence (e.g., Bergman & McMullen, 2022; Schwartz, 2013), especially in the case of incubators, a primary source of support for ventures at the very beginning of their life-cycle (Lukeš et al., 2019; Mian et al., 2016; Woolley & MacGregor, 2022). Moreover, existing research often overlooked the potential downsides of these support systems, such as inflating entrepreneurs’ confidence and distorting their judgment and ability to objectively evaluate opportunities (Hayward et al., 2006; Hunt & Kiefer, 2017). Given the growing number of ESOs and the significant public and private resources invested in them, it is crucial to examine whether — and under what conditions — they genuinely foster startups’ growth and development. This question is especially pressing in nascent settings, where the business environment is at “an early stage of formation” (Santos & Eisenhardt, 2009, p.644). Such contexts are characterized by rapid technological shifts, unclear market demands, divergent stakeholder expectations, lack of legitimacy, and an overall high level of uncertainty (Agarwal et al., 2017; Gao & McDonald, 2022), thus making external support mechanisms potentially more consequential —and more variable— in shaping startup outcomes.

In this paper we contribute to this gap by further investigating whether startups operating in a nascent setting can indeed rely on dedicated entrepreneurial support initiatives to foster growth. Following Hunt and Kiefer (2017), we focus on an entrepreneurial support programs (ESP) rather than an actor — that we define as *a set of structured actions, and activities that aim at supporting startups in their early phase of development led by entrepreneurial support organizations*. In response to rapidly changing competitive landscapes, ESOs have created tailored programs to meet the diverse needs of various startup types, growth stages, sectors, and stakeholder engagement models (Cohen et al., 2019b; Hallen et al., 2020). We thus deem important to shift from viewing ESOs as unitary actors to examining their programs, as growing program variety leads to variability in impact (Bergman & McMullen, 2022; Hunt & Kiefer, 2017).

Our empirical context is the emerging (new) space economy.<sup>1</sup> We consider European space startups supported by the European Space Agency's Business Incubators Centers (ESA BICs), a Europe-wide and sector-specific ESP. We consider an original sample of 1043 startups (357 of which supported through ESA BICs) observed over years 2005–2022. Drawing on signaling and learning mechanisms, we assess whether supported space startup experience higher growth in total assets, employees, and turnover and a higher likelihood to access Venture Capital (VC) funding compared to their unsupported counterparts. Our results show that supported startups experience higher growth in total assets both during<sup>2</sup> the program and afterwards.<sup>3</sup> They also experience higher growth in employment, yet only during the program and not afterwards. However, we observe no statistically significant difference in turnover growth between supported and unsupported startups, either during or after the program. Finally, our results highlight that supported startups are more likely to secure VC funding. Qualitative data further support these results.

Overall, these findings highlight that sector-specific ESPs, backed by a high-status and unique partner, can effectively support startups in building their resource base—an essential step in enabling entrepreneurs to seize the opportunities they envision (Penrose, 1959). However, our results do not, on average, show that this strengthened resource endowment translates into outperformance in turnover after the support period—although the foundations for such an outcome appear to be in place.

## 2. Theoretical Background

Building an entrepreneurship industry warrants extending current knowledge into entrepreneurial support activities and their outcomes (Audretsch & Thurik, 2003; Hunt & Kiefer, 2017). Deepening our insight into the supply-side dynamics of the entrepreneurship industry is crucial for a more nuanced understanding of the motives driving investments in entrepreneurial activities and their outcomes, since a gap often exists between the conducive atmosphere and the tangible results (Bergman & McMullen, 2022; Schwartz, 2013).

A broad spectrum of those entrepreneurial activities is conducted by ESOs, which have received much scholarly attention over the last two decades (Clayton, 2024). A first stream of studies provides taxonomies and categorizations that delineate various types of ESOs, shedding light on their similarities and differences (Bergman & McMullen, 2022). Scholars also focused on different services offered by ESOs (e.g., McCarthy et al., 2018; Ng et al., 2019), while others described a specific type of ESOs (see for instance Hansen et al., 2000 for incubators or Browder et al., 2019 for maker

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<sup>1</sup> The (new) space economy is defined as the “*full range of activities and the use of resources that create value and benefits to human beings in the course of exploring, researching, understanding, managing, and utilizing space*” (OECD, 2022, p.19).

<sup>2</sup> The ESA BIC program provides support for a period of up to 2 years.

<sup>3</sup> On average, we observe space startups over a 3 years time span after the end of their respective ESPs.

spaces), or compared within and across types (see for instance Mian et al., 2016 or Theodoraki, 2020). These efforts contributed to answer to the question “Who is who?” and thus to the enrichment of the ESO construct in its various forms and manifestations.

A second stream expanded on managerial and governance structures that characterize ESOs and evaluation tools. ESOs are dynamic entities that can evolve over time to adapt to changes or structural constraints. ESOs often struggle to be financially sustainable since their primary focus is to support uncertain businesses with uncertain revenue models (Carayannis & von Zedtwitz, 2005; Cloitre et al., 2024). To sustain themselves, some business incubators evolved into education centers (Tracey et al., 2018). Some scholars argued in support of a more intensive, structured and “controlled” support to startups, while others suggested to employ a more informal and relational governance (Albahari et al., 2019; Vanderstraeten et al., 2016). Other scholars started to provide frameworks and methodological contributions — like scale development and other evaluation tools — to assess ESOs’ impact on startups (e.g., Gerlach & Brem, 2015).

A third stream of studies in ESO literature focuses on examining ESOs’ initiation, unfolding, and performance. For instance, Grimaldi and Grandi (2005) examined how incubating organizations evolve throughout the progressing change of companies’ requirements and needs. Rothaermel and Thursby (2005), investigate the effect of university knowledge flows on firm level performance of university incubators. Qian and colleagues (2011) analyzed the factors shaping incubators’ decision to locate in a specific geographical area, while Tracey et al. (2018) showed the dynamics of an Italian business incubator and the related new venture creation legitimacy process. Recently, Clayton (2024) showed that mentored/incubated firms outperform non-mentored ones financially, because they are conducive to receiving greater funding.

Despite such abundant research progress, whether ESOs are making (or not) the difference in supporting startup growth and development remains a critical question, partially addressed by mixed findings across different ESOs (e.g., Bergman & McMullen, 2022; Clayton, 2024; Schwartz, 2013). As highlighted by Bergman and McMullen (2022), such mixed results could be traced back to the variety of contexts, timeframes, comparison groups considered. We also argue that research progress has been hindered by the tendency to evaluate ESOs overall entity rather than through their specific programs. Indeed, research has not fully embraced the evolution of the working model of ESOs. ESO often do not have a single core program like in their early diffusion. They evolved through having a more diversified offering (Bergman & McMullen, 2022). ESOs are organizations that operate through programs that can vary from more general purposes to more specific ones according to the context in which the startups operate (Spigel, 2016). Each program may have different configurations according to the aim, in terms of stakeholder engaged (and level of engagement), target startups to support, and so conducive to different outcomes, even if mainly organized by the same ESOs.

Scholars have recently conceptualized support for entrepreneurship as an industry of its own, i.e. an entrepreneurship industry. They raised concerns that it may undermine and distort entrepreneurs' judgment and incentives in certain contexts, profiting from entrepreneurial endeavours and ultimately hindering startup growth (Hunt & Kiefer, 2017). Therefore, there is an urgent need to assess how ESOs, through their programs, are making (or not) the difference in supporting startup development and growth in specific context. This is particularly important in uncertain and emerging environments, where entrepreneurial challenges are amplified (Gao & McDonald, 2022). Filling this gap by focusing on context-specific ESPs will advance our understanding of the supplyside dynamics of the entrepreneurship industry, which can yield important implications for entrepreneurs, their ventures, and other stakeholders.

### **3. Hypothesis Development**

Drawing resources from external sources is crucial for the survival and growth of a startup (Acs et al., 2009; Davidsson et al., 2020; Shane & Venkataraman, 2000). However, gaining positive attention from key stakeholders, such as customers and investors, poses a substantial challenge. In the absence of a proven business model, track record, established reputation, and sometimes even a tangible product, there is considerable uncertainty surrounding new ventures (Cavallo et al., 2023; Shepherd & Gruber, 2021), as they are conducive to the liabilities of newness and smallness (Gimenez-Fernandez et al., 2020). This uncertainty may influence customers' decisions to purchase products from startups or investors' decisions to invest in them (Newbert et al., 2022). Such a challenge is further accentuated when startups operate in nascent settings.

Nascent settings experience significant technical, regulatory, or institutional shifts that have the potential to fundamentally redefine existing industries and their related boundaries (Eisenhardt, 2021; Benner & Trispsas, 2012). Nascent settings present promising opportunities for startups, although they are often characterized by untested and still developing technologies, products, or processes (Tushman & Anderson, 1986), as well as uncertain demand (Hiatt & Carlos, 2019; Ozcan & Eisenhardt, 2009). Therefore, while startups have their own intrinsic risky and uncertain nature, this uncertainty is compounded when they are populating a nascent setting (Eisenhardt, 2021; Navis & Glynn, 2010).

To face the compounded uncertainty characterizing nascent settings, startups can engage with and benefit from ESOs and their tailored ESPs. On the one hand, ESOs can support startups by enabling access to resources, financial means on top, as well as other human and social resources (Cohen et al., 2019b; Hallen et al., 2020). These are both directly provided within ESPs, but also collected later on by startups whose development is kickstarted by ESO support and showcased through it. On the other one, ESOs play a crucial role in influencing the evaluations made by key stakeholders, such as customers and investors, signaling their quality (Colombo & Delmastro, 2002). Engaging with such

stakeholders is fundamental for startups to validate their value proposition and further expand their access to valuable resources.

To date, research exploring the impact of ESOs' programs on startup growth suggests that startups supported by ESOs garner appeal from stakeholders due to the perceived reliability and credibility (Grilli & Marzano, 2023). However, this observation tends to overlook potentially significant variations concerning specific ESPs provided by ESOs. In particular, ESOs' activities can vary substantially across specific industrial sectors and market segments (Grimaldi & Grandi, 2005; Klofsten et al., 2020; Schwartz & Hornyk, 2008). ESPs are either more or less sector-specific in delivering their technology, business and networking support to startups. We argue that sector-specific ESPs can particularly aid startup growth in uncertain and nascent settings.

To investigate this argument, startup growth is not considered as solely consisting in the achievement of a goalpost, such as a given level of revenues, but rather as a dynamic process involving the pursuit of market opportunities via the accumulation, recombination, or acquisition, also via external channels, of the resources necessary to exploit those opportunities (Dosi et al., 2020; Ireland et al., 2003; Penrose, 1959). Fostering growth therefore implies supporting startups in building a resource base enabling entrepreneurs to seize the opportunities they envision. To explain the effect of ESPs' support on growth, we draw upon insights from learning and signaling theoretical mechanisms. Learning and signaling are two stylized mechanisms that have been theorized to drive ESOs' aid to startup development and growth (e.g., Cohen et al., 2019b; Colombo & Delmastro, 2002; Gonzalez-Uribe & Leatherbee, 2018; Hallen et al., 2020).

The learning mechanism includes dedicated support services and learning opportunities for startups such as coaching, workshops and training sessions, networking with industrial local partners as well as investors (Gonzalez-Uribe & Leatherbee, 2018). Sector-specific ESPs are even more conducive to learning activity, due to the direct support to enhance the startup's development by leveraging heavily on specialized sector experts, a key factor in uncertain and nascent settings (Benner & Trispsas, 2012). Moreover, such learning mechanism is further reinforced depending on the organizational sponsorship of the program — which is a further reason why we argue about the need to focus on programs as a unit of analysis. ESOs operate through programs and each program may have one or more organizational sponsors. Organizational sponsors like VCs, government agencies, science parks and other ESOs can mitigate the bounded rationality of new ventures in nascent settings (Cohen et al., 2019a; Flynn, 1993). For example, Plug and Play has corporate acceleration programs with incumbent firms that can provide support and precious and sector-specific feedback to startups in the early phases. Sector-specific ESPs with more organizational sponsors may offer a boarder pool of experts and mentors more directly involved in the program while also facilitating access to local knowledge (Amezcuca et al., 2013).

Research also shows that sponsors — such as ESOs and government agencies — provide new ventures with legitimacy and visibility via certification and help them develop capabilities (Armanios et al., 2017). Therefore, sponsors can effectively signal the quality of startups to external parties upon undertaking a careful selection of which startups to support (Cavallo et al., 2019; Gompers & Lerner, 2001; Hallen et al., 2023; Hellmann & Puri, 2002; Spence, 1973). Prior work shows that ESPs can help startups raise funds given also the signal of higher credibility and/or help obtaining higher status partner post-program (Gonzalez-Uribe & Leatherbee, 2018; Hallen et al., 2020, 2023). In our study, the higher-status partner is directly involved as a sponsor of the ESPs together with the ESOs. Having two sponsors and one unique for the nascent setting of reference provides a strong signal to the stakeholders. Based on the arguments presented, our core hypothesis posits that, in nascent settings, startups supported by sector-specific ESPs and backed by a high-status and unique partner will enhance their resource base, gain higher valuation from customers, and ultimately experience greater growth compared to unsupported startups. Building on the same theoretical foundations and established research, we hypothesize that, in nascent settings, these startups will also attract significant attention and resources from another critical stakeholder: venture capital investors (e.g., Audretsch & Lehmann, 2004; Baum & Silverman, 2004; Bertoni et al., 2011; Chan, 1983; Davila et al., 2003; Dutta & Folta, 2016; Lerner, 2010; Puri & Zarutskie, 2012; Sorenson & Stuart, 2001).

We, therefore, hypothesize the following:

**Hypothesis 1 (H1):** *In nascent settings, startups supported by sector-specific ESPs, backed by a high-status and unique partner, experience higher growth compared to unsupported startups.*

**Hypothesis 2 (H2):** *In nascent settings, startups supported by sector-specific ESPs, backed by a high-status and unique partner, are more likely to attract VC funding compared to unsupported startups.*

## **4. Methodology**

### **4.1. Empirical setting**

Our empirical setting is the emerging (new) space economy (Punnala et al., 2024; Weinzierl, 2018), defined as “*the full range of activities and the use of resources that create value and benefits to human beings in the course of exploring, researching, understanding, managing, and utilizing space*” (OECD, 2022, p.19). It is an evolution beyond the boundaries of the traditional space sector fuelled by recent technological advances, such as radical progress in AI, the launch of rockets, and the miniaturization of satellites and related technologies. Such new technological opportunities, along with lower space access costs, paved the way for new, private firms — i.e. startups — to enter this nascent setting. These firms developed innovative solutions not only for the traditional space sector, but also with applications in agriculture, energy, logistics, insurance, and more (Weinzierl et al., 2024; McKinsey, 2023; Vittori et al., 2022; Paravano et al., 2025). An

example of this evolution is represented by the launch of AI-powered earth observation services, allowing to precisely and actively monitor the growth of crops or critical infrastructure. The entry of space startups has revitalized the dynamics of the traditional space sector, populated by large and powerful incumbents, serving both private and public customers and often operating under governmental oversight and contracts (Roy, 2025), and characterized by a rigid institutional environment, with negative effects on startups and growth (Lamine et al., 2021).

Within this setting, European space startups can benefit from significant support systems to robustly ground and kickstart their development through the European Space Agency (ESA). ESA is an international government agency founded in 1975. In 2025, it encompasses 23 Member States. It formally cooperates with all non-Member European States and collaborates with other non-European space organizations. ESA coordinates the resources, both financial and not, of Member States to invest in and develop Europe's space capability, shaping and managing its space programme and elaborating the appropriate industrial policy (Antoni et al., 2024).

Among the diverse initiatives led by ESA, our investigation focuses on ESA's Business Incubation Centers (BICs). These are ESPs which started in 2005 and involve the largest European network of ESOs, with the goal of supporting entrepreneurs operating in the new space economy. Each startup can be incubated for up to two years, during which the ESA BIC program delivers support. ESA has unique technical and market knowledge concerning the new space economy (Antoni et al., 2024) and can thus offer superior resources, more valuable advice, and confer high-status to the supported startups (Hallen et al., 2014, 2023). In addition to providing standardized support, each ESP operated through a local ESO also serves as a catalyst for the regional space ecosystem, pooling resources and expertise from local actors and their networks—such as universities, research laboratories, and private companies. The support provided consists of access to: (i) physical resources, such as laboratories; (ii) office and other spaces; (iii) financial resources, namely up to €50 k of equity-free funding for product and IP development; (iv) 80 h of entrepreneurial and business support, coaching, and mentoring; and (v) networking opportunities, as identified by previous literature (e.g., Carayannis & von Zedtwitz, 2005; Theodoraki, 2020). The program includes several services for startups such as the technical support from leading space experts in the region where ESO is located as well as from ESA itself, business coaching, fundraising guidance, and opportunities, access to legal advice, network of business partners, workshop, and trainings. Startups are supported only if they successfully pass a selection procedure. First, prospective incubatees have to apply to a specific ESP, providing the required documentation within a given cut-off date. Applications are then evaluated against a set of both general and local requirements, known to the applicants. If eligible, they are invited to present their ideas in front of an evaluation board, which carefully selects which applications can be accepted within the program. Support is then provided only upon the signature of a contract.

## 4.2. Data

Data were collected with the aim of creating a census of European space economy startups (Antoni et al., 2024; Cloitre et al., 2023). A space startup is new business entity that develops space technologies, products, or services, such as satellite or launch vehicle manufacturing, ground equipment production, space-based services, or data analytics integrating space and terrestrial systems (Lamine et al., 2021; BRYCE, 2018, p.1). To identify startups operating in this nascent setting, we relied on a series of commercial databases, namely Crunchbase, Pitchbook, and Orbis (Bureau van Dijk, Moody's), which have been widely employed in empirical studies on new ventures (Dalle et al., 2017; Fu et al., 2023). These databases provide descriptions characterizing firms' operations and goals. We filtered such descriptions using a rich array of keywords synthesizing and describing the nature of activities performed or technologies employed within the space economy sector, such as 'earth observation', 'geo-mapping', or 'satellites' (for further details, please refer to Appendix 1). Keywords were validated by a panel of 15 experts. As additional sampling conditions, we considered startups with headquarter in Europe (UK included), that were for-profit, and that were incorporated from year 2005 onwards. Overall, 5075 startups were first identified via these keywords across the three databases. They were then independently evaluated and cross-checked by trained research assistants, whom we ensured were knowledgeable about the sector, with the goal of crossing out false positives. Discrepancies and dubious cases were jointly discussed with one of the authors and all assistants, to further ensure equal levels of information and awareness among evaluators.

We then complemented these sources with a public list of startups supported by the ESA BICs.<sup>4</sup> The list provided includes overall 978 space startups, supported from January 2005 up to September 2022. From it, we excluded 162 startups that made only minor use of space-related technologies and were considered out of scope according to the (new) space economy definitions, thus falling outside the boundaries of our investigation.

All startups were then mapped into the Orbis database to retrieve demographic information and balance-sheet and profit-and-loss account data. The sample resulting from this data collection is composed of 1676 space startups. We then excluded from the analysis 162 startups with missing information. Next, we removed 209 startups with non-missing balance-sheet and profit-and-loss account data for one year only. Finally, we excluded 262 supported space startup that did not have data for at least one year during the incubation period and one year after it ended. The final sample considered in the analysis is therefore composed of 1043 space startups, 357 of which were supported by ESA BICs, observed over the years 2005–2022. They form an unbalanced panel of 7190 firm-year observations. On average, supported startups are observed over a 3 years time span after the end of support.

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<sup>4</sup> The list of supported startups can be openly consulted at <https://commercialisation.esa.int/startups/> [last accessed on September 2025].

Finally, we considered two additional sources. First, Venture Capital (VC) information was retrieved from VICO 6.0 database (Bertoni et al., 2015; Devigne et al., 2013), an encompassing database censuring Venture Capital (VC) investment rounds in firms operating in 27 European Countries, United Kingdom, and Israel from 1/1/1998 up to 31/12/2021, currently covering 81,801 investment deals. Among 1,043 space startups, 133 received at least one round of investment from VCs over the period considered. Second, we relied on the Orbis Intellectual Property database (Bureau van Dijk, Moody's) to assess whether startups filed at least one patent application over the period considered. Space startups without records on VICO or Orbis Intellectual Property were assumed not to have received VC funding, nor to have submitted patent applications or having approved patents.

### 4.3. Variables

*Dependent variable.* To assess startup growth (Hypothesis 1) our key dependent variable is startups' size. We operationalize size considering *Turnover*, *Employees*, and *Total assets*. Growth is a multidimensional phenomenon, which can be assessed through a diverse array of measures, often interdependent with each other (Shepherd & Wiklund, 2009). In particular, we measure growth in terms of total assets and employees, reflecting startups' resource endowments, as well as turnover, a market-based performance outcome (Davidsson & Honig, 2003; Ireland et al., 2003; Quas et al., 2021; Shepherd & Wiklund, 2009). By considering these three indicators, our goal is to conduct an overarching assessment of space startups' growth. These variables are winsorised at the first and last percentile to minimize the impact of outliers. Furthermore, they are included in models via a natural logarithm transformation.

To assess the likelihood of receiving VC funding (Hypothesis 2), we consider the first round of investment received by startups from VCs. We thus define the dummy variable *VC-backing*, having value 1 in the first year of investment and 0 otherwise.

*Independent variable.* The variable of interest is Support, a dummy with value 1 from the first year of *sector-specific ESP* support onwards, and 0 otherwise. To distinguish between the years during which support is received and the following period, we then split this dummy into two. We define respectively the variable *During support*, with value 1 from the first to the last year of support (both included), and *Post support*, with value 1 from the first year following the end of support onwards.

*Control variables.* While VC is the dependent variable of our Hypothesis 2, we also control for VC-backing when testing for Hypothesis 1, since it is a key factor affecting startups' growth, as proved by prior evidence (Bertoni et al., 2011; Croce et al., 2013). The variable *VC-backing* captures whether the startup has received a VC investment round, taking value 1 from the year of first VC round onwards, and 0 otherwise.

Other firm-level control variables are *Age*, both as a linear and squared term, measured as the number of years since incorporation. Furthermore, we control for the *Number of patent applications* filed by startups as the cumulative number of applications over years. Both variables are included in models as natural logarithms.

Finally, we computed the variable *Supported startups* as the year-specific number of startups supported through the ESA BIC program considered in each ESA BIC.

We then consider a set of variables characterizing the kind of activities conducted by startups within the (new) space economy. In line with recent OECD guidelines (OECD, 2022), we categorized space startups according to their segment, namely ‘upstream’ or ‘downstream’. The ‘upstream’ segment encompasses scientific and technological activities related to space technologies, such as the manufacturing and launch of satellites. Conversely, the ‘downstream’ segment comprises activities related to the operation of space infrastructure and all “down-to-earth” products (OECD, 2022), such as the processing of satellite data. In models, we included the *Upstream* variable, with value 1 for startups in the upstream segment and 0 for those in the downstream one. Second, we categorized space startups according to the specific *Application* they pursue, namely Earth Observation; Positioning, navigation and timing; Satellite Communications; Science; Space Exploration; Space Technologies; and Space Transportation. The categorization of space startups, performed by trained research assistants, followed the same routine as the one employed for their selection.

Finally, we include a set of *country* and a set *year* specific dummy variables.

#### **4.4. Descriptive statistics**

Table 1 reports descriptive statistics on all space startups in our sample and the correlation matrix of all variables considered. On average, we consider startups around 6 years old, which operate mostly in the downstream segment (65%). While the average startup has around 7.4 million euros in both turnover and total assets and accounts for 24 employees, median values are substantially smaller: half of startups generate up to 443 thousand euros in turnover, operate with up to 411 thousand euros in total assets, and account for up to 5 employees. This highlights the heterogeneity across startups in our sample and the large dispersion characterizing the variables considered.

Significant differences emerge when comparing supported and non-supported startups in Table 2. Considering median values, supported space startups are substantially smaller compared to non-supported ones. They are also 1.6 years younger and much less likely to operate in the upstream segment (with mean values respectively 0.176 vs 0.423). However, a higher share of them is VC-backed. In particular, among the 133 VC-backed startups in our sample, 63 are supported by ESA BICs while 70 are not, respectively 17.7% and 10.2% of the two groups. Results reported in Table 2 highlight that supported and unsupported startups in our sample are not directly comparable, a point addressed in our empirical strategy, Section 4.5.

[Table 1 & 2 about here]

Table 3 reports descriptive statistics on supported startups only (not compared with non-supported startups), investigating the evolution of chosen variables in the years before, during, and after support is received. Such descriptive evidence shows that supported startups grow in total assets, employees, and turnover. Growth is particularly sustained in total assets. Before support, space startups reported an average total assets value of 102 thousand euros, which increases to 512 thousand euros during support, and to 1.893 million euros afterwards. A similar pattern emerges for employment, although median values suggest a much more modest growth, with the median startup moving from 2 employees before support to 4 employees afterwards. Finally, turnover increases from an average of 288 thousand euros in the years before support to 639 thousand euros after the program. However, as discussed in the next section, the goal of our empirical investigation is to assess whether supported startups grow more (or less) than unsupported startups.

[Table 3 about here]

#### 4.5. Empirical strategy

Our empirical strategy revolves around matching techniques. Since our goal is to assess whether supported space startups benefit from superior growth compared to non-supported ones, we must ensure that these groups are as closely comparable as possible. While matching relies on observable characteristics only, it is the most effective and widely employed identification method when a counterfactual is not immediately available (e.g., Islam et al., 2018). As in the case of ESA BICs, the list of startups that applied but were not included in the program or that dropped off the program remains confidential, preventing the employment of other identification strategies, such as a regression discontinuity designs.

We implement a Propensity Score Matching (PSM, Rosenbaum & Rubin, 1983). We consider the support received from ESA's sector-specific support program as treatment. To build comparable sets of supported and non-supported startups, we match supported startups considering their characteristics in the year prior being support with similar non-supported startups. In particular, we consider the following firm-level characteristics: size, age, whether they have already received VC-backing, the number of patent applications submitted, whether they operate in the upstream segment, their application and country. Since we operationalize size considering three different variables, namely *Turnover*, *Employees*, and *Total Assets*, we perform three separate PSMs, each considering the corresponding size variable. Since our treatment is distributed over time, we undertake an iterative matching over years without replacement. In other words, starting from the earliest year, we recursively match supported and non-supported space startups. Supported space startups that are not-matched are discarded, as well as non-supported startups that are matched, ensuring that the same control startup is not associated with multiple treated startups over time. Space startups are paired based on propensity score estimated via a logit model, allowing up to 3 controls for 1 treated startup and considering a caliper of 0.2 (Austin, 2011). The balancing of space startups' characteristics in the matching year is assessed via t-tests and Pearson's  $\chi^2$  test for categorical variables,

reported in Table 4. The matched supported and non-supported startups do not present statistically significant differences across all variables in all three separate PSMs.

[Table 4 about here]

To assess Hypothesis 1, we estimate an augmented Gibrat Law growth model, in line with existing literature (Colombo and Grilli, 2010; Bertoni et al., 2011), of the form:

$$\ln(\text{Size}_{it}) = \alpha + \beta \ln(\text{Size}_{it-1}) + \gamma \text{Specialised ESP support}_{it} + \delta \text{Controls}_{it} + \theta \text{Year dummies}_t + \varepsilon_{it}$$

where the coefficient  $\beta$  captures the effect of past size on current size; if  $\beta$  is below 1, it shows that startups are on a slowing growth trajectory, as a larger size in  $t - 1$  negatively affects size at time  $t$ .  $\gamma$  captures the effect of support on size at time  $t$ . When the dummy *Support* is included in the model, a positive and statistically significant value of  $\gamma$  would provide initial support to Hypothesis 1. When split in *During support* vs *Post support*, two positive and statistically significant coefficients would imply that startups do not only experience superior growth in size while supported, but also once such support is terminated.

This model is estimated via a dynamic fixed-effect panel regression. The appropriateness of fixed versus random effects was tested via Hausman tests<sup>5</sup>. Firm-level fixed-effects further reinforce our empirical strategy by accounting for time-invariant confounding factors, either observable or not, which may not just influence startups' growth paths, but also their likelihood of being supported (Quas et al., 2021). As control variables we include startup's *Age* and *Age squared*, whether it received *VC-backing*, the *Number of patents*, as well as the number of *Supported startups*. Since fixed-effects are employed, time-invariant controls are excluded from the analysis.

To assess Hypothesis 2, we model the likelihood of receiving the first round of VC investment as a function of receiving *Support* via event history analysis techniques. We consider discrete-time duration models rather than continuous-time duration models, given we observe data on a yearly basis. Following Jenkins (2005), formally, we estimate the hazard rate of the first VC investment considering as logistic hazard model of the form:

$$h_i(t, X_t) = \frac{1}{1 + \exp(-\alpha_j - \beta' X_t)}$$

where  $t$  is our time unit, i.e. years,  $X_t$  a set of covariates, and  $\alpha_t$  a baseline hazard (or relative odds) which is common. As robustness analysis, we consider a cloglog model specification on top of logit specification (Allison, 1982; Jenkins, 1995; 2005).

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<sup>5</sup> Hausman tests were estimated on models 1, 3, and 5 of Table 4. For the growth model considering total assets, the resulting value is  $\chi^2(22) = 291.80$ , for employees it is  $\chi^2(20) = 406.55$ , for turnover  $\chi^2(21) = 108.75$ . This last test was estimated basing both (co)variance matrices on disturbance variance estimate from efficient estimator.

The event of interest is the first round of VC investment. Our independent variable of interest is having received sector-specific *ESP Support*. As control variables we include the first lag of *Total assets*, the *Upstream* dummy, a set of dummy variables for *countries* and one for *applications*, as well as startup's *Age* and *Number of patents*. Since the interest is on modelling the first round of VC investment, the subsequent period is not considered in this analysis.

These models are estimated on the whole sample of space startups and on a matched sample, to minimize the impact of observable confounders (Guerini and Quas, 2016). We follow the same matching strategy presented above, considering *Total assets* as size variable. In conducting this analysis we exclude from the sample 5 supported startups that received their first round of VC investments before being supported. Furthermore, we ensure that matched non-supported startups have not received their first round at the year of matching.<sup>6</sup>

#### 4.6 Post-hoc Analysis: Qualitative interviews

To shed further light on results obtained via this quantitative analysis, we complement it with a qualitative exploratory investigation by conducting six interviews with representatives of the ESA BIC programs in Italy and France. The interviews were semistructured, lasted between 45 min to 1 h each, were conducted online, and aimed to corroborate insights into how startups' development is promoted through ESPs, as well as to understand whether there is added value in supporting startups and, if so, what that value is.

## 5. Results

Table 5 reports the estimates from the growth model. While the descriptive statistics in Table 3 suggest that supported startups do grow along all dimensions considered, results from models 1, 3, and 5 show that, compared to similar non-supported startups, statistically significant differences remain in terms of total assets ( $\beta = 0.510$ , p-value = 0.001) and employees ( $\beta = 0.126$ , p-value = 0.093). Conversely, the coefficient for turnover, although positive, is not statistically significant at the conventional 90% level ( $\beta = 0.279$ , p-value = 0.216). The *Support* variable is split into *During support* vs *Post support* in models 2, 4, and 6. The coefficients of the *During support* and *Post support* dummies for turnover remain both positive yet non-statistically significant (respectively  $\beta = 0.293$ , p-value = 0.193 and  $\beta = 0.237$ , p-value = 0.357). When size is measured as the number of employees, we observe a positive effect for the program only in the years during which supported is provided ( $\beta = 0.125$ , p-value = 0.095), but not afterwards ( $\beta = 0.115$ , p-value = 0.235). Finally, both *During* and *Post support* dummies show positive and significant effect when total assets are considered (respectively  $\beta = 0.558$ , p-value = 0.001 and  $\beta = 0.371$ , p-value = 0.025), with the two coefficients being statistically different.<sup>7</sup> Support

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<sup>6</sup> Additional information on this matching is available in Appendix 2, Table 8.

<sup>7</sup> We explicitly test the linear combination (as difference) of the two coefficients, resulting in a t-value of 1.92 and a corresponding p-value of 0.057.

thus grants higher growth in terms of total assets both during they years support is provided and afterwards, although the effect is smaller during the latter period. In particular we find that the additional growth rate enjoyed by supported firms is around 56% during support and 37% afterwards.

Empirical evidence therefore provides mixed support to Hypothesis 1, depending on how size is measured. Overall, while support from ESA BICs confers startups superior growth in total assets both during and after the support period, the same does not hold for growth in turnover, and only partially for growth in employment—i.e., only during the years in which support is received. With regard to control variables, Age is non-significant, although this is driven by the matching procedure, since age increases homogeneously for both supported and non-supported startups. Similarly, the number of *supported startups*, i.e. startups contemporaneously supported in the same year in the given ESP, does not significantly affect growth. A higher number of patent applications exerts a positive effect on both employees and total assets growth, but not on turnover growth. Finally, consistently with existing evidence (Bertoni et al., 2011; Colombo & Grilli, 2010), we observe that the lagged value of *Size* is smaller than 1, indicating that startups' growth tends to slow down over time (Lockett et al., 2011).

[Table 5 about here]

Qualitative interviews provide confirmation of these results and help interpreting them. First, interviews highlighted that supported startups operating in the nascent space economy tend to prioritize technical and resource development over commercialization during their early phases. Taking from the very words of an ESA BIC representative: *“many of the startups need major technical development and devolve their efforts mainly to this. They reach the end of the two years showing that the idea is technically feasible. Once understood that it is indeed feasible and how to industrialize it, it is considered how to bring it to the market as a product. Over the two years they see and hear about commercialization, but it's not their first goal”*. The representative also remarked: *“They have [commercialization] in the back of their minds, but their first issue is to understand whether the idea works [...], moving from their idea on-paper to its actual realization”*. Another interviewee also highlighted how commercialization is in many cases delayed and may even start after the end of the support program: *“BICs plant seeds. Then value capture [...] happens next, consolidating the business model, speaking to target costumers”*. In order to undertake such development, startups are in need of resources *“in terms of machinery, competences in using them, or systems to undertake experiments which can help testing the concepts laying at the heart of the startup's idea, to foster their industrialization and commercialization”*. This is reflected in a higher growth in total assets. Among key startups' resources certainly we have to consider also employees. However, we do not observe a higher growth in employees beyond the program duration. The latter seems to have a straightforward explanation: *“Supported startups don't have much need to hire during or immediately after the*

program, as in most cases they are still developing their core service and underlying technologies, which is a founders' job".

With regard to Hypothesis 2, Table 6 reports the estimates from discrete-time duration models. All models show that receiving *Support* markedly increases the likelihood of receiving VC-backing (depending on the model considered, the coefficient ranges from  $\beta = 1.783$ , p-value = 0.000 in model 2 and  $\beta = 2.970$ , p-value = 0.003 in model 3). Among the other factors enhancing startups' odds are patent applications and being larger in size (in terms of total assets). Results are consistent across model specifications (logit in models 1 and 3 and cloglog in models 2 and 4) and samples (the overall sample in models 1 and 2 and the matched sample in models 3 and 4).

[Table 6 about here]

Qualitative interviews supported this results too. Interviewees highlighted how the “brand” or “stamp” of ESA BICs and ESA itself is extremely valuable and supports firms in gaining access to potential investors, particularly among investors that are not specialized in the emerging new space economy. This is in line with our results showing a higher likelihood of accessing VC funding for supported startups.

## 6. Discussion

We began by noting that although researchers have recognized the relevance of supply-side dynamics of the entrepreneurship industry (Hunt & Kiefer, 2017; Brattström, 2022; Brattström & Wennberg, 2022), there still need to shed light on whether and how ESOs' programs affect startup growth (Bergman & McMullen, 2022; Woolley & MacGregor, 2022), especially with reference to nascent settings. By focusing on the emerging new space economy, our study investigated how sector-specific ESP can influence startup growth.

Our findings show that being supported through sector-specific ESP grants a higher growth in terms of total assets. This superior growth in total assets starts during the support period and is maintained afterwards, reflecting startups' ability to acquire, develop and assimilate resources over time (Penrose, 1959). Therefore, a higher growth in total assets can arguably be characterized as the *growth potential* of these startups. Furthermore, we find evidence that supported startups also experience a higher growth in employment while support is provided, but not afterwards. Yet, this result is not surprising, as early-stage, technology-intensive businesses typically require small core team composed of highly skilled professionals who usually join in early phases (e.g., Baron et al., 2001). Furthermore, we find evidence that supported startups do not over-perform their counterparts in terms of turnover growth. Therefore, their *growth potential* is not yet reflected in turnover, which we characterize as a measure of *growth realized* — i.e. an organization's ability to exploit and commercialize developed resources. Qualitative evidence highlights that supported startups operating in the nascent space economy tend to prioritize technical and resource development over commercialization during their early

phases of development. Although connections and dialogue with the market are enhanced through ESPs, these efforts have yet to fully mature into commercialization and market expansion. This implies that overall sector-specific ESPs have a positive impact on triggering a growth process that has not yet materialized in terms of outcome. Moreover, we found that supported startups have higher likelihood of accessing VC funding. They benefit from a signalling effect granted by the participation to the program, as the “quality signal” of ESA BICs and ESA itself acts as a powerful catalysts for investors.

Through this study, we thus contribute to a more nuanced understanding of the effects of ESOs on startup growth in the nascent setting of the new space economy.

### **7.1. Implication for theory**

Our study makes several contributions to the literature. First, we deepen the understanding of supply-side dynamics of the entrepreneurship industry. Prior studies have examined what elements of the entrepreneurship industry are more or less efficient (Elert et al., 2020; Karlson et al., 2021; Sandström et al., 2018), and much of the research shows that univocal, tangible outcomes are often lacking (Bergman & McMullen, 2022; Schwartz, 2013). We contribute to advancing knowledge of the entrepreneurship industry by focusing on the role of ESPs for startup growth in a nascent setting. Research generally argues that ESOs and other sponsors can positively impact the resource endowment of startups to foster their development (Bergman & McMullen, 2022). Recently, however, scholars have highlighted that support from the entrepreneurship industry may have drawbacks, such as fostering overconfidence among startup founders and reducing objectivity in their judgments (Hunt & Kiefer, 2017). Others suggested that mechanisms of organizational sponsorship are more complex than previously theorized depending on the context (Amezcuca et al., 2013). Our results show that in nascent setting, ESOs, through ESPs — backed by a high-status partner in that sector, can trigger a growth process in terms of developing and assimilating resources, which we term as growth potential. Interviews with some ESO representatives provide support for this empirical result. Therefore, we have reasons to believe that a higher status partner — like ESA — can indeed offer resources, more valuable advice, and confer high-status to the startups’ supported through sectorspecific ESPs (Hallen et al., 2014, 2023). However, our study reveals that while growth potential increased, it did not materialize in terms of higher turnover. While similar conclusions have been reached in prior research (e.g., Lukeš et al., 2019; Ejermo, 2018), we offer original empirical evidence with specific reference to nascent settings. These contexts, often characterized by compounded uncertainty (Benner & Tripsas, 2012), highlight the critical need for ESPs to accelerate learning among supported startups. In complex and uncertain environments, like the emerging space economy, additional factors may influence the transition from growth potential to realized growth. We speculate that one key factor could be certainly time. Specifically, on average, we observe the growth of space startups over the three-year period following the ESP. Therefore, the timeframe analyzed may simply be too short for space startups to demonstrate

significant increases in turnover. Other factors beyond time likely play a role and warrant further investigation as well as alternative explanations. For example, support systems may “spoil” entrepreneurs and impact their ability to lead in uncertain business environments affecting especially when need to turn growth potential into realized growth and successful exits (Hunt & Kiefer, 2017). Yet, our qualitative evidence seems not to support this explanation. Additionally, in-depth qualitative studies are required to capture in detail changes in processes and behaviors. Other scholars suggest that public support schemes can distort firms’ behavior. Some firms may specialize in securing grants rather than focusing on improving their productivity and gaining market share, effectively becoming “subsidy entrepreneurs” (Gustafsson et al., 2016; Karlson et al., 2021; Sandström & Alm, 2022). However, given the structure of the ESA BIC programs — where grants are equity-free and constitute only a small component of the overall value provided through the local ESOs — and considering that the grants are relatively small compared to the substantial investments typically required by space startups, this explanation does not seem to apply in this context.

Second, we contribute to a shift in focus in the investigation of the entrepreneurship industry. Building on Hunt and Kiefer (2017), we emphasize entrepreneurial support programs and activities as the “fuel” of the entrepreneurship industry. Since the same organizations and actors deliver a variety of programs with different configurations and goals (Spigel, 2016), we need to shift the locus of investigation to programs rather than actors. Therefore, we introduce and formally define ESPs together with the logics and relevance of studying specific programs’ impact on startups to really examine the role of ESOs (Buffart et al., 2020). ESOs, indeed, operate through different programs and so their impact on startups can differ based on those specific programs. While research has traditionally centered on the organizational-level impact of ESOs overall on startup growth and development (e.g., Rothaermel & Thursby, 2005), we focus on dedicated programs delivered by ESO and not on ESO itself. Moreover, in contrast to the prevailing perspective of startup growth as an outcome, we provide empirical evidence supporting a view of startup *growth-as-a-process* (Dosi et al., 2020; Penrose, 1959). Specifically, we argue that making a more explicit distinction between the constructs of *growth potential* and *realized growth* is crucial for unpacking the dynamics of growth as a process for startups (and firms more broadly). This distinction has already proven valuable in other research streams (e.g., Cohen & Levinthal, 1990). Future studies can build on our findings to further investigate the diverse dynamics that characterize startup growth as an ongoing process and ESPs.

Third, we find evidence that supported startups are more likely to secure VC funding. This aligns with established research on the signaling effects of highstatus partners, such as ESA (e.g., Cavallo et al., 2019; Colombo & Grilli, 2010; Gompers & Lerner, 2001; Hallen et al., 2023; Hellmann & Puri, 2002; Spence, 1973). Our study extends this body of work by demonstrating how these signaling mechanisms apply in nascent settings, such as the new space economy.

Finally, we offer one of the first contributions on space entrepreneurship. By examining how entrepreneurship unfolds through support systems in nascent contexts — such as the (new) space economy — we address the need for a more context-sensitive understanding of new venture creation and growth (Santos & Eisenhardt, 2009). Notably, both scholars and leading political institutions increasingly refer to the space economy as the “final economic frontier”, underscoring the expanding entrepreneurial opportunities arising from the strategic integration of spacebased and digital technologies (Weinzierl, 2018). In this regard, our study contributes to the literature by shedding light on a novel and underexplored setting that is gaining significant attention from policymakers in Europe and beyond.

### **7.2. Implications for practice**

Our study also provides significant implications for a diverse range of stakeholders including ESO managers and staff, entrepreneurs, policymakers, investors, among the others. First, for ESO managers and staff, our findings underscore the importance of aligning their organization’s focus with specific sectors. This strategic approach enables them to tailor their support services more effectively, thereby maximizing their impact on and benefits for entrepreneurial ventures. Additionally, understanding the advantages and challenges in the startup growth process faced by entrepreneurs when (non) supported can inform decisionmaking processes within these organizations, guiding the development of tailored programs and initiatives to address specific needs. For entrepreneurs, our study highlights the potential benefits of engaging with sector-specific ESOs, such as access to specialized expertise, networks, and resources. Policymakers can leverage these insights to design policies that support ESPs, thereby fostering entrepreneurship and economic development within targeted sectors and regions (Cloitre et al., 2023). However, these benefits should be contrasted with costs associated with these support initiatives, both direct and indirect, thus taking into account their overall cost-effectiveness (Castillo et al., 2014; Foreman-Peck, 2013). Finally, established firms can gain a better understanding of the role that ESPs play in nurturing innovation and driving startup growth within their respective sectors, potentially leading to increased collaboration and support for these organizations. Overall, our research contributes to raising awareness of the strategic significance of ESPs, backed by hi-status partners in uncertain nascent settings such as the (new) space economy (Schwartz & Hornych, 2008, 2010, 2012; Vanderstraeten & Matthyssens, 2012).

### **7.3. Limitations and future research**

While our research provides a significant contribution to the scholarly literature on space entrepreneurship, it is also limited by industry boundaries. Future research holds promise in uncovering new insights into the dynamics unfolding between sector-specific ESPs and startups’ growth across different settings. Future research can explore this relationship considering startups operating in other sectors, gaining a more comprehensive understanding of ESPs’ effectiveness and applicability across diverse entrepreneurial and institutional landscapes. Similar arguments hold from a temporal

perspective. While we consider the new space economy in its nascent years, the same hypotheses we tested may lead to different results by analysing the development of space startups over a longer time-span.

Furthermore, there is an opportunity to delve into the perceived value that startups attribute to sectorspecific ESPs from their own perspective. Some interviews we have conducted seem to confirm the value of ESA BICs program, but more qualitative and extensive future research is needed. Understanding how startups view and utilize the resources, guidance, and networks provided by tailored ESPs can shed light on the effectiveness of these programs in facilitating entrepreneurial success and fostering growth, or alternatively in incentivizing the so-called “subsidy entrepreneurship” (Gustafsson et al., 2016; Karlson et al., 2021; Sandström & Alm, 2022), distorting startups’ incentives. Such investigations can contribute to refining strategies for supporting startups and optimizing the impact of ESPs in driving innovation and economic development across various sectors. Additionally, future research may also investigate in further detail the nature of support received by startups, both in their early years and later on. On the one hand, the value provided through ESOs programs is not limited to the grant, coaching, or other resources provided, since they can act as conduits to a wider network of actors, extending beyond venture capitalists. Quality signals can thus be complemented by network dynamics that can further shape startups’ growth and development. On the other one, startups that do not apply to or that are excluded from a specific program or ESO may seek and potentially obtain support from other, various sources.

While in this paper we focused on whether startups are supported by a specific program, we do not exclude that they may receive diverse and repeated support from diverse programs and organizations. Furthermore, future empirical assessments of this specific or similar programs could aim to causally identify and quantify their impact, disentangling the selection and treatment components (Bertoni et al., 2011) that often contribute to shaping their outcomes. Finally, while we identify a positive effect on firm growth, we do not assess whether the ESP is valuable overall, which would require a more encompassing cost–benefit analysis. Future research may address this point by considering programs as the units of analysis, then assessing the associated benefits and costs, including opportunity-costs. While ESPs can be instrumental in addressing market failures or inefficiencies or serving policy goals, they may fall short of the intended goals (Lerner, 2009), biasing competition or fostering the so-called “subsidy entrepreneurship” (Gustafsson et al., 2016; Karlson et al., 2021; Sandström & Alm, 2022), as entrepreneurs with lower productivity are incentivized to devote substantial efforts and resources to seek funding and support, particularly from public grants.

## References

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

- Agarwal, R., Moeen, M., & Shah, S. K. (2017). Athena's birth: Triggers, actors, and actions preceding industry inception. *Strategic Entrepreneurship Journal*, 11(3), 287-305.
- Albahari, A., Klofsten, M., & Rubio-Romero, J. C. (2019). Science and technology parks: A study of value creation for park tenants. *The Journal of Technology Transfer*, 44(4), 1256-1272.
- Allison, P. (1982). Discrete-Time Methods for the Analysis of Event Histories. *Sociological Methodology/Americans Sociological Association*.
- Amezcuca, A. S., Grimes, M. G., Bradley, S. W., & Wiklund, J. (2013). Organizational sponsorship and founding environments: A contingency view on the survival of business-incubated firms, 1994–2007. *Academy of Management Journal*, 56(6), 1628-1654.
- Antoni, N., Dolmans, S., Giannopapa, C., & Reymen, I. (2024). Navigating Open Innovation at the European Space Agency: A Strategy for Public Organizations and Their Stakeholders. *California Management Review*, 67(1), 69-95.
- Armanios, D. E., Eesley, C. E., Li, J., & Eisenhardt, K. M. (2017). How entrepreneurs leverage institutional intermediaries in emerging economies to acquire public resources. *Strategic Management Journal*, 38(7), 1373-1390.
- Audretsch, D. B., & Lehmann, E. E. (2004). Financing high-tech growth: the role of banks and venture capitalists. *Schmalenbach Business Review*, 56, 340-357
- Audretsch, D. B., & Thurik, A. R. (2003). Entrepreneurship, industry evolution and economic growth. In *Austrian Economics and Entrepreneurial Studies* (Vol. 6, pp. 39-56). Emerald Group Publishing Limited.
- Austin, P. C. (2011). Optimal caliper widths for propensity-score matching when estimating differences in means and differences in proportions in observational studies. *Pharmaceutical Statistics*, 10(2), 150-161.
- Baron, J. N., Hannan, M. T., & Burton, M. D. (2001). Labor pains: Change in organizational models and employee turnover in young, high-tech firms. *American journal of sociology*, 106(4), 960-1012.
- Baum, J. A., & 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.
- Benner, M. J., & Tripsas, M. (2012). The influence of prior industry affiliation on framing in nascent industries: The evolution of digital cameras. *Strategic Management Journal*, 33(3), 277-302.
- Bergman, B. J., & McMullen, J. S. (2022). Helping entrepreneurs help themselves: A review and relational research agenda on entrepreneurial support organizations. *Entrepreneurship Theory and Practice*, 46(3), 688-728.
- Bertoni, F., Colombo, M. G., & Grilli, L. (2011). Venture capital financing and the growth of high-tech start-ups: Disentangling treatment from selection effects. *Research Policy*, 40(7), 1028-1043.
- Bertoni, F., Colombo, M. G., & Quas, A. (2015). The patterns of venture capital investment in Europe. *Small business economics*, 45, 543-560.
- Browder, R. E., Aldrich, H. E., & Bradley, S. W. (2019). The emergence of the maker movement: Implications for entrepreneurship research. *Journal of Business Venturing*, 34(3), 459-476.
- BRYCE (2018), Start-Up Space, Update on Investment in Commercial Space Ventures, Available here: [https://brycetech.com/reports/report-documents/Bryce\\_Start\\_Up\\_Space\\_2018.pdf](https://brycetech.com/reports/report-documents/Bryce_Start_Up_Space_2018.pdf). Accessed on March 2024.
- Buffart, M., Croidieu, G., Kim, P. H., & Bowman, R. (2020). Even winners need to learn: How government entrepreneurship programs can support innovative ventures. *Research Policy*, 49(10), 104052.
- Carayannis, E. G., & von Zedtwitz, M. (2005). Architecting gloCal (global–local), real-virtual incubator networks (G-RVINs) as catalysts and accelerators of entrepreneurship in transitioning and developing economies: lessons learned and best practices from current development and business incubation practices. *Technovation*, 25(2), 95–110.

- Castillo, V., Maffioli, A., Rojo, S., & Stucchi, R. (2014). The effect of innovation policy on SMEs' employment and wages in Argentina. *Small Business Economics*, 42(2), 387-406.
- Cavallo, A., Cosenz, F., & Noto, G. (2023). Business model scaling and growth hacking in digital entrepreneurship. *Journal of Small Business Management*, 1-28.
- Cavallo, A., Ghezzi, A., Dell'Era, C., & Pellizzoni, E. (2019). Fostering digital entrepreneurship from startup to scaleup: The role of venture capital funds and angel groups. *Technological Forecasting and Social Change*, 145, 24-35.
- Chan, Y. S. (1983). On the positive role of financial intermediation in allocation of venture capital in a market with imperfect information. *The Journal of Finance*, 38(5), 1543-1568
- Clayton, P. (2024). Mentored without incubation: Startup survival, funding, and the role of entrepreneurial support organization services. *Research Policy*, 53(4), 104975.
- Cloitre, A., Dos Santos Paulino, V., & Theodoraki, C. (2023). The quadruple/quintuple helix model in entrepreneurial ecosystems: an institutional perspective on the space case study. *R&D Management*, 53(4), 675-694.
- Cloitre, A., Theodoraki, C., & dos Santos Paulino, V. (2024). Entrepreneurial support organizations in sustainable knowledge-driven ecosystems. *The Journal of Technology Transfer*, 1-25.
- Cohen, S. L., Bingham, C. B., & Hallen, B. L. (2019a). The role of accelerator designs in mitigating bounded rationality in new ventures. *Administrative Science Quarterly*, 64(4), 810-854.
- Cohen, S., Fehder, D. C., Hochberg, Y. V., & Murray, F. (2019b). The design of startup accelerators. *Research Policy*, 48(7), 1781-1797.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly*, 35(1), 128-152.
- Colombo, M. G., & Delmastro, M. (2002). How effective are technology incubators?: Evidence from Italy. *Research Policy*, 31(7), 1103-1122.
- Colombo, M. G., & Grilli, L. (2010). On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital. *Journal of Business Venturing*, 25(6), 610-626.
- Croce, A., Martí, J., & Murtinu, S. (2013). The impact of venture capital on the productivity growth of European entrepreneurial firms: 'Screening' or 'value added' effect?. *Journal of Business Venturing*, 28(4), 489-510.
- Dalle, J. M., Den Besten, M., & Menon, C. (2017). Using Crunchbase for economic and managerial research. *OECD*, <https://doi.org/10.1787/6c418d60-en>.
- Davidsson, P., & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331.
- Davidsson, P., Recker, J., & Von Briel, F. (2020). External enablement of new venture creation: A framework. *Academy of Management Perspectives*, 34(3), 311-332.
- Davila, A., Foster, G., & Gupta, M. (2003). Venture capital financing and the growth of startup firms. *Journal of Business Venturing*, 18(6), 689-708.
- Devigne, D., Vanacker, T., Manigart, S., & Paeleman, I. (2013). The role of domestic and cross-border venture capital investors in the growth of portfolio companies. *Small Business Economics*, 40, 553-573.
- Dosi, G., Grazzi, M., Moschella, D., Pisano, G., & Tamagni, F. (2020). Long-term firm growth: an empirical analysis of US manufacturers 1959–2015. *Industrial and Corporate Change*, 29(2), 309-332.
- Dutta, S., & Folta, T. B. (2016). A comparison of the effect of angels and venture capitalists on innovation and value creation. *Journal of Business Venturing*, 31(1), 39-54.

- Eisenhardt, K. M. (2021). *Strategy in nascent markets and entrepreneurial firms*. In I. M. Duhaime, M. A. Hitt, & M. A. Lyles (Eds.), *Strategic management: State of the field and its future* (online ed., pp. 169–186). Oxford Academic.
- Ejermo O. (2018) Does incubation lead to innovation? Evidence from the Swedish incubation program. Retrieved from: [https://www.tillvaxtanalys.se/download/18.347b5cf7166740f99f173c83/1542627788370/pm%202018\\_20\\_Does%20incubation%20lead%20to%20innovation.pdf](https://www.tillvaxtanalys.se/download/18.347b5cf7166740f99f173c83/1542627788370/pm%202018_20_Does%20incubation%20lead%20to%20innovation.pdf). Accessed Mar 2024.
- Elert N., Sjöö K., Wennberg K. (2020). When less is more: Why limited entrepreneurship education may result in better entrepreneurial outcomes. *International Review of Entrepreneurship*, 18(1), 1–32.
- Flynn, D. M. (1993). Sponsorship and the survival of new organizations. *Journal of Small Business Management*, 31(1), 51.
- Foreman-Peck, J. (2013). Effectiveness and efficiency of SME innovation policy. *Small Business Economics*, 41(1), 55–70.
- Fu, D., Jenkinson, T., & Rauch, C. (2023). How do financial contracts evolve for new ventures?. *Journal of Corporate Finance*, 81, 102222.
- Gao, C., & McDonald, R. (2022). Shaping nascent industries: Innovation strategy and regulatory uncertainty in personal genomics. *Administrative Science Quarterly*, 67(4), 915-967.
- Gerlach, S., & Brem, A. (2015). What determines a successful business incubator? Introduction to an incubator guide. *International Journal of Entrepreneurial Venturing*, 7(3), 286-307.
- Gimenez-Fernandez, E. M., Sandulli, F. D., & Bogers, M. (2020). Unpacking liabilities of newness and smallness in innovative start-ups: Investigating the differences in innovation performance between new and older small firms. *Research Policy*, 49(10), 104049.
- Gompers, P., & Lerner, J. (2001). The venture capital revolution. *Journal of Economic Perspectives*, 15(2), 145-168.
- Gonzalez-Uribe, J., & Leatherbee, M. (2018). The effects of business accelerators on venture performance: Evidence from start-up Chile. *The Review of Financial Studies*, 31(4), 1566-1603.
- Grilli, L., & Marzano, R. (2023). Bridges over troubled water: Incubators and start-ups' alliances. *Technovation*, 121, 102689.
- Grimaldi, R., & Grandi, A. (2005). Business incubators and new venture creation: an assessment of incubating models. *Technovation*, 25(2), 111-121.
- Guerini, M., & Quas, A. (2016). Governmental venture capital in Europe: Screening and certification. *Journal of Business Venturing*, 31(2), 175-195.
- Gustafsson, A., Stephan, A., Hallman, A., & Karlsson, N. (2016). The “sugar rush” from innovation subsidies: A robust political economy perspective. *Empirica*, 43, 729–756.
- Hallen, B. L., Cohen, S. L., & Bingham, C. B. (2020). Do accelerators work? If so, how?. *Organization Science*, 31(2), 378-414.
- Hallen, B. L., Cohen, S. L., & Park, S. H. (2023). Are seed accelerators status springboards for startups? Or sand traps?. *Strategic Management Journal*, 44(8), 2060-2096.
- Hallen, B. L., Katila, R., & Rosenberger, J. D. (2014). How do social defenses work? A resource-dependence lens on technology ventures, venture capital investors, and corporate relationships. *Academy of Management Journal*, 57(4), 1078-1101.
- Hansen, M. T., Chesbrough, H. W., Nohria, N., & Sull, D. N., Morten, T., & Hansen, N. N. (2000). Networked incubators: Hothouses of the new economy. *Harvard Business Review*, 78(5), 74–84.

- Hayward, M. L., Shepherd, D. A., & Griffin, D. (2006). A hubris theory of entrepreneurship. *Management science*, 52(2), 160-172.
- Hellmann, T., & Puri, M. (2002). Venture capital and the professionalization of start-up firms: Empirical evidence. *The Journal of Finance*, 57(1), 169-197.
- Hiatt, S. R., & Carlos, W. C. (2019). From farms to fuel tanks: Stakeholder framing contests and entrepreneurship in the emergent US biodiesel market. *Strategic Management Journal*, 40(6), 865-893.
- Hunt, R. A., & Kiefer, K. (2017). The entrepreneurship industry: Influences of the goods and services marketed to entrepreneurs. *Journal of Small Business Management*, 55, 231-255.
- Ireland, R. D., Hitt, M. A., & Sirmon, D. G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of Management*, 29(6), 963-989.
- Islam, M., Fremeth, A., & Marcus, A. (2018). Signaling by early stage startups: US government research grants and venture capital funding. *Journal of Business Venturing*, 33(1), 35-51.
- Jenkins, S. P. (1995). Easy estimation methods for discrete-time duration models. *Oxford Bulletin of Economics & Statistics*, 57(1).
- Jenkins, S. P. (2005). Survival analysis. *Unpublished manuscript, Institute for Social and Economic Research, University of Essex, Colchester, UK*, 42, 54-56.
- Karlson, N., Sandström, C., & Wennberg, K. (2021). Bureaucrats or Markets in Innovation Policy?—a critique of the entrepreneurial state. *The Review of Austrian Economics*, 34(1), 81-95.
- Klofsten, M., Lundmark, E., Wennberg, K., & Bank, N. (2020). Incubator specialization and size: Divergent paths towards operational scale. *Technological Forecasting and Social Change*, 151, 119821.
- Lamine, W., Anderson, A., Jack, S. L., & Fayolle, A. (2021). Entrepreneurial space and the freedom for entrepreneurship: Institutional settings, policy, and action in the space industry. *Strategic Entrepreneurship Journal*, 15(2), 309-340.
- Lerner, J. (2010). The future of public efforts to boost entrepreneurship and venture capital. *Small Business Economics*, 35, 255-264.
- Lockett, A., Wiklund, J., Davidsson, P., & Girma, S. (2011). Organic and acquisitive growth: re-examining, testing and extending Penrose's growth theory. *Journal of Management Studies*, 48(1), 48-74.
- Lukeš, M., Longo, M. C., & Zouhar, J. (2019). Do business incubators really enhance entrepreneurial growth? Evidence from a large sample of innovative Italian start-ups. *Technovation*, 82, 25-34.
- McCarthy, I. P., Silvestre, B. S., von Nordenflycht, A., & Breznitz, S. M. (2018). A typology of university research park strategies: What parks do and why it matters. *Journal of Engineering and Technology Management*, 47(5), 110-122.
- McKinsey (2023). Space: The \$1.8 trillion opportunity for global economic growth. Retrieved from <https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-the-1-point-8-trillion-dollar-opportunity-for-global-economic-growth>. Accessed on Mar 2024.
- Mian, S., Lamine, W., & Fayolle, A. (2016). Technology Business Incubation: An overview of the state of knowledge. *Technovation*, 50, 1-12.
- Navis, C., & Glynn, M. A. (2010). How new market categories emerge: Temporal dynamics of legitimacy, identity, and entrepreneurship in satellite radio, 1990–2005. *Administrative Science Quarterly*, 55(3), 439-471.
- Newbert, S. L., Kher, R., & Yang, S. (2022). Now that's interesting and important! Moving beyond averages to increase the inferential value of empirical findings in entrepreneurship research. *Journal of Business Venturing*, 37(2), 106185.

- Ng, W. K. B., Appel-Meulenbroek, R., Cloodt, M., & Arentze, T. (2019). Towards a segmentation of science parks: A typology study on science parks in Europe. *Research Policy*, 48(3), 719-732.
- OECD (2022), OECD Handbook on Measuring the Space Economy, 2nd Edition, OECD Publishing, Paris, <https://doi.org/10.1787/8bfef437-en>.
- Ozcan, P., & Eisenhardt, K. M. (2009). Origin of alliance portfolios: Entrepreneurs, network strategies, and firm performance. *Academy of Management Journal*, 52(2), 246-279.
- Paravano, A., Rosseau, B., Locatelli, G., Weinzierl, M., & Trucco, P. (2025). Toward the LEO economy: A value assessment of commercial space stations for space and non-space users. *Acta Astronautica*, 228, 453-473.
- Penrose, E. T. (1959): The theory of the growth of the firm, Oxford: Blackwell, 3rd ed.
- Punnala, M., Punnala, S., Ojala, A., & Kuusniemi, H. (2024). The Space Economy: Review of the Current Status and Future Prospects. In A. Ojala, & W. W. Baber (Eds.), *Space Business* (online ed., pp. 27–54). Palgrave Macmillan.
- 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
- Qian, H., Haynes, K. E., & Riggle, J. D. (2011). Incubation push or business pull? Investigating the geography of U.S. business incubators. *Economic Development Quarterly*, 25(1), 79-90.
- Quas, A., Martí, J., & Reverte, C. (2021). What money cannot buy: a new approach to measure venture capital ability to add non-financial resources. *Small Business Economics*, 57, 1361-1382.
- Roy, R. (2025). Governance of knowledge development in a public-private partnership: NASA's efforts to design the Space Shuttle. *Research Policy*, 54(2), 105151.
- Ratinho, T., Amezcua, A., Honig, B., & Zeng, Z. (2020). Supporting entrepreneurs: A systematic review of literature and an agenda for research. *Technological Forecasting and Social Change*, 154, 119956.
- Rosenbaum, P. R., & Rubin, D. B. (1983). The central role of the propensity score in observational studies for causal effects. *Biometrika*, 70(1), 41-55.
- Rothaermel, F. T., & Thursby, M. (2005). University–incubator firm knowledge flows: assessing their impact on incubator firm performance. *Research policy*, 34(3), 305-320.
- Sandström, C., & Alm, C. (2022). Directionality in innovation policy and the ongoing failure of green deals: Evidence from biogas, bio-ethanol, and fossil-free steel. In K. Wennberg, & C. Sandström (Eds.), *Questioning the entrepreneurial state. International studies in entrepreneurship* (Vol. 53., pp. 251–259). Springer.
- Sansone, G., Andreotti, P., Colombelli, A., & Landoni, P. (2020). Are social incubators different from other incubators? Evidence from Italy. *Technological Forecasting and Social Change*, 158, 120132.
- Santos, F. M., & Eisenhardt, K. M. (2009). Constructing markets and shaping boundaries: Entrepreneurial power in nascent fields. *Academy of Management Journal*, 52(4), 643-671.
- Schwartz, M. (2013). A control group study of incubators' impact to promote firm survival. *The Journal of Technology Transfer*, 38(3), 302-331.
- Schwartz, M., & Hornych, C. (2008). Specialization as strategy for business incubators: An assessment of the Central German Multimedia Center. *Technovation*, 28(7), 436-449.
- Schwartz, M., & Hornych, C. (2010). Cooperation patterns of incubator firms and the impact of incubator specialization: Empirical evidence from Germany. *Technovation*, 30(9-10), 485-495.
- Schwartz, M., & Hornych, C. (2012). Specialisation versus diversification: perceived benefits of different business incubation models. *International Journal of Entrepreneurship and Innovation Management*, 15(3), 177-197.

- Shepherd, D. A., & Gruber, M. (2021). The lean startup framework: Closing the academic–practitioner divide. *Entrepreneurship Theory and Practice*, 45(5), 967-998.
- Shepherd, D., & Wiklund, J. (2009). Are we comparing apples with apples or apples with oranges? Appropriateness of knowledge accumulation across growth studies. *Entrepreneurship Theory and Practice*, 33(1), 105-123.
- Sorenson, O., & Stuart, T. E. (2001). Syndication networks and the spatial distribution of venture capital investments. *American Journal of Sociology*, 106(6), 1546-1588.
- Spence, M. (1973). Job market signaling. *Quarterly Journal of Economics*, 87(3), 355-374.
- Spigel, B. (2016). Developing and governing entrepreneurial ecosystems: the structure of entrepreneurial support programs in Edinburgh, Scotland. *International Journal of Innovation and Regional Development*, 7(2), 141-160.
- Theodoraki, C. (2020). A holistic approach to incubator strategies in the entrepreneurial support ecosystem. *M@n@gement*, 23(4), 13-27.
- Theodoraki, C., Messeghem, K., & Rice, M. P. (2018). A social capital approach to the development of sustainable entrepreneurial ecosystems: an explorative study. *Small Business Economics*, 51, 153-170.
- Tracey, P., Dalpiaz, E., & Phillips, N. (2018). Fish out of water: Translation, legitimation, and new venture creation. *Academy of Management Journal*, 61(5), 1627-1666.
- Tushman ML, Anderson P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly* 31(3): 439–465.
- Vanderstraeten, J., & Matthyssens, P. (2012). Service-based differentiation strategies for business incubators: Exploring external and internal alignment. *Technovation*, 32(12), 656-670.
- Vanderstraeten, J., van Witteloostuijn, A., Matthyssens, P., & Andreassi, T. (2016). Being flexible through customization – the impact of incubator focus and customization strategies on incubatee survival and growth. *Journal of Engineering and Technology Management*, 41(1), 45-64.
- Vittori, D., Natalicchio, A., Panniello, U., Petruzzelli, A. M., & Cupertino, F. (2022). Business Model Innovation between the embryonic and growth stages of industry lifecycle. *Technovation*, 117, 102592.
- Weinzierl, M. (2018). Space, the final economic frontier. *Journal of Economic Perspectives*, 32(2), 173-192.
- Weinzierl, M., Choudhury, P., Khanna T., MacCormack A., and Rosseau B. (2024). Your company needs a space strategy now. *Harvard Business Review*. Retrieved from <https://hbr.org/2022/11/your-company-needs-a-space-strategy-now>. Accessed on Mar 2024.
- Woolley, J. L., & MacGregor, N. (2022). The influence of incubator and accelerator participation on nanotechnology venture success. *Entrepreneurship Theory and Practice*, 46(6), 1717-1755.

**TABLES**

**Table 1** - Descriptive statistics and correlation matrix

		<b>Descriptive statistics</b>				<b>Correlation matrix</b>								
		N. obs.	Mean	Std.Dev.	Median	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
(1)	Turnover	4,078	7,454	22,091	443	1.000								
(2)	Employees	4,993	23.7	57.1	5	0.659*	1.000							
(3)	Total assets	6,486	7,432	25,427	411	0.645*	0.485*	1.000						
(4)	Age	7,190	5.83	3.73	5	0.240*	0.214*	0.182*	1.000					
(5)	Upstream	7,190	0.35	0.477	0	0.032*	0.086*	0.009	0.048*	1.000				
(6)	Num. patents	7,190	1.42	8.41	0	0.351*	0.292*	0.297*	0.114*	0.101*	1.000			
(7)	VC	7,190	0.115	0.319	0	-0.053*	-0.001	-0.022	-0.045*	-0.069*	0.045*	1.000		
(8)	Supported startups	7,190	4.68	8.61	0	-0.137*	-0.149*	-0.114*	-0.125*	-0.190*	-0.028*	0.123*	1.000	

*Notes:* Variables are not in logarithmic form. Values are in thousand euros. In the correlation matrix, \* highlights values significant at 95%.

**Table 2** - Descriptive statistics comparing supported and non-supported firms

	<b>Not supported</b>				<b>Supported</b>			
	N. obs.	Mean	Std.Dev.	Median	N. obs.	Mean	Std.Dev.	Median
Turnover	3,117	9,620	24,862	786	961	429	1,193	145
Employees	3,426	31.3	66.4	8	1,567	7.04	18.3	3
Total assets	4,745	9,750	29,112	643	1,741	1,114	6,661	149
Age	5,067	6.3	3.99	5	2,123	4.71	2.7	4
Upstream	5,067	0.423	0.494	0	2,123	0.176	0.381	0
Num. patents	5,067	1.65	9.86	0	2,123	0.852	2.64	0
VC	5,067	0.0914	0.288	0	2,123	0.17	0.376	0
Supported startups	5,067	0	0	0	2,123	15.8	8.61	16

Notes: Variables are not in logarithmic form. Values are in thousand euros.

**Table 3** - Descriptive statistics before, during, and after support for selected variables

<b>Panel A</b>	<b>Pre-support</b>			
	N. obs.	Mean	Std.Dev.	Median
Turnover	178	288	800	52.4
Employees	198	2.57	2.9	2
Total assets	264	102	155	33.6
VC-backing	327	0.0245	0.155	0

  

<b>Panel B</b>	<b>During-support</b>			
	N. obs.	Mean	Std.Dev.	Median
Turnover	382	275	610	100
Employees	602	4.22	5.21	3
Total assets	640	512	2,035	101
VC-backing	817	0.0845	0.278	0

  

<b>Panel C</b>	<b>Post-support</b>			
	N. obs.	Mean	Std.Dev.	Median
Turnover	401	639	1,644	250
Employees	767	10.4	25.3	4
Total assets	837	1,893	9,379	288
VC-backing	979	0.185	0.388	0

Notes: Variables are not in logarithmic form. Values are in thousand euros.

**Table 4** – Descriptive statistics, matched samples

	<u>Not supported</u>		<u>Supported</u>			
<b>Panel A: Turnover; 51 non-supported and 45 supported startups</b>						
	Mean	Std.Dev.	Mean	Std.Dev.	$\Delta$	t-statistic
ln(Turnover)	4.7	2.99	4.35	1.9	0.359	(0.692)
ln(Age)	1.44	0.687	1.34	0.327	0.0995	(0.887)
ln(Num. patents)	0.117	0.533	0.164	0.522	-0.0473	(-0.438)
VC-backing	0.0196	0.14	0.0222	0.149	-0.00261	(-0.0886)
Upstream	0.255	0.44	0.156	0.367	0.0993	(1.19)
Country	Pearson's $\chi^2(11)$ : 5.932					
Application	Pearson's $\chi^2(5)$ : 1.283					
<b>Panel B: Employees; 64 non-supported and 52 supported startups</b>						
	Mean	Std.Dev.	Mean	Std.Dev.	$\Delta$	t-statistic
ln(Employees)	1.33	0.909	1.28	0.663	0.0491	(0.325)
ln(Age)	1.34	0.594	1.25	0.346	0.0857	(0.921)
ln(Num. patents)	0.115	0.533	0.224	0.576	-0.109	(-1.06)
VC-backing	0.0313	0.175	0.0385	0.194	-0.00721	(-0.21)
Upstream	0.297	0.46	0.308	0.466	-0.0108	(-0.125)
Country	Pearson's $\chi^2(13)$ : 6.674					
Application	Pearson's $\chi^2(5)$ : 3.855					
<b>Panel C: Total assets; 99 non-supported and 73 supported startups</b>						
	Mean	Std.Dev.	Mean	Std.Dev.	$\Delta$	t-statistic
ln(Total assets)	4	2.61	3.91	1.79	0.0932	(0.263)
ln(Age)	1.33	0.549	1.3	0.327	0.025	(0.346)
ln(Num. patents)	0.13	0.485	0.161	0.459	-0.0307	(-0.419)
VC-backing	0.0404	0.198	0.0274	0.164	0.013	(0.457)
Upstream	0.202	0.404	0.178	0.385	0.0239	(0.392)
Country	Pearson's $\chi^2(14)$ : 5.545					
Application	Pearson's $\chi^2(5)$ : 1.463					

**Table 5** – Dynamic panel fixed-effects regression models

	Turnover		Employees		Total assets	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
ln(Turnover) [t-1]	0.579*** (0.112) [0.000]	0.580*** (0.112) [0.000]				
ln(Employees) [t-1]			0.423*** (0.080) [0.000]	0.423*** (0.080) [0.000]		
ln(Total assets) [t-1]					0.499*** (0.048) [0.000]	0.503*** (0.048) [0.000]
Support	0.279 (0.224) [0.216]		0.126* (0.074) [0.093]		0.510*** (0.154) [0.001]	
During support		0.293 (0.224) [0.193]		0.125* (0.074) [0.095]		0.558*** (0.158) [0.001]
Post support		0.237 (0.256) [0.357]		0.115 (0.097) [0.235]		0.371** (0.164) [0.025]
ln(Age)	0.901 (2.604) [0.730]	0.691 (2.695) [0.798]	0.909 (0.839) [0.281]	0.885 (0.842) [0.295]	1.991 (1.660) [0.232]	1.485 (1.619) [0.360]
ln(Age) [squared]	-0.930 (1.195) [0.439]	-0.817 (1.258) [0.518]	-0.702 (0.504) [0.166]	-0.688 (0.506) [0.176]	-0.887 (0.883) [0.317]	-0.601 (0.857) [0.484]
ln(Num. patents)	-0.080 (0.238) [0.737]	-0.075 (0.237) [0.751]	0.090* (0.046) [0.052]	0.095** (0.046) [0.041]	0.222** (0.092) [0.017]	0.233** (0.091) [0.012]
VC-backing	-0.093 (0.238) [0.698]	-0.089 (0.238) [0.708]	0.052 (0.048) [0.287]	0.053 (0.050) [0.290]	0.124 (0.104) [0.235]	0.142 (0.106) [0.183]
Supported startups	0.021 (0.016) [0.183]	0.021 (0.016) [0.185]	-0.001 (0.005) [0.864]	-0.001 (0.004) [0.889]	-0.006 (0.010) [0.518]	-0.006 (0.010) [0.565]
Constant	5.539*** (1.416) [0.000]	5.401*** (1.529) [0.001]	2.423*** (0.858) [0.006]	2.409*** (0.862) [0.006]	3.068** (1.351) [0.024]	2.698** (1.308) [0.041]
Year dummies	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Fixed effects	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
N. observations	606	606	604	604	1,132	1,132
N. firms	94	94	116	116	172	172
R-squared	0.494	0.494	0.451	0.451	0.527	0.529
F-test	21.76	21.73	14.87	15.05	53.62	61.45
p-values	0.000	0.000	0.000	0.000	0.000	0.000
log-likelihood	-753.4	-753.3	-28.04	-28.02	-1222	-1220

Notes: Robust standard errors in round brackets; p-values in squared brackets; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

**Table 6** – Discrete-time duration models

	Overall		Matched	
	Model 1	Model 2	Model 3	Model 4
	logit	cloglog	logit	cloglog
Support	1.824*** (0.504) [0.000]	1.783*** (0.499) [0.000]	2.970*** (0.997) [0.003]	2.771*** (0.962) [0.004]
ln(Total assets) [t-1]	0.208*** (0.057) [0.000]	0.203*** (0.056) [0.000]	0.604*** (0.206) [0.003]	0.592*** (0.189) [0.002]
ln(Age)	-2.597 (1.934) [0.179]	-2.499 (1.902) [0.189]	9.279* (5.446) [0.088]	9.061* (5.475) [0.098]
ln(Age) [squared]	0.108 (0.557) [0.846]	0.092 (0.549) [0.866]	-4.030** (1.732) [0.020]	-3.930** (1.743) [0.024]
ln(Num. patents)	0.234 (0.145) [0.105]	0.223 (0.139) [0.109]	0.979* (0.503) [0.052]	0.939* (0.481) [0.051]
Supported startups	-0.043 (0.028) [0.123]	-0.042 (0.028) [0.132]	-0.079 (0.050) [0.112]	-0.070 (0.051) [0.165]
Upstream	-1.023*** (0.331) [0.002]	-0.998*** (0.323) [0.002]	-2.890*** (0.885) [0.001]	-2.822*** (0.780) [0.000]
ln(time)	0.905** (0.377) [0.016]	0.887** (0.365) [0.015]	4.278** (1.777) [0.016]	4.180** (1.649) [0.011]
Constant	-4.110* (2.271) [0.070]	-4.182* (2.215) [0.059]	-21.545*** (7.164) [0.003]	-21.222*** (6.791) [0.002]
Country dummies	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
Application dummies	<i>yes</i>	<i>yes</i>	<i>yes</i>	<i>yes</i>
N. observations	4,721	4,721	649	649
Pseudo R2	0.139	.	0.299	.
Wald chi2	104.4	110.8	47.38	63.71
p-value	0.000	0.000	0.000	0.000
log-likelihood	-359.7	-359.5	-62.60	-61.93

Notes: Robust standard errors in round brackets; p-values in squared brackets; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Appendix 1

To identify potential space startups, as discussed in Section 4.2., we considered the following list and combinations of keywords:

**Table 7 – Keywords**

Query	Keywords
Primary	(planetary exploration OR solar system OR space science OR satellite constellation OR satellite system OR space medicine OR ground control OR ground stations OR space manufacturing OR satellite telecommunication OR geomapping OR remote sensing OR satellite broadband OR lunar habitat OR space tourism OR space downstream OR space debris OR spacecraft OR launch system OR earth observation OR orbit OR space mining OR space travel OR space access OR space communication OR space exploration OR in-space OR space-based OR nanosat OR cubesat OR picosat OR satellite communication OR satellite navigation OR satellites OR space exploitation OR satellite system OR geo-mapping)
Secondary	(AI OR artificial intelligence OR ground segment OR micro-launchers OR launch technology OR propulsion) AND (satellite OR space OR orbit)
Tertiary	(digital) AND (satellite OR orbit OR space technology)

Without considering double counts, we extracted 1,457 firms from Crunchbase, 1,307 from Pitchbook, and 2,311 from Orbis based on self-reported descriptions. These databases were first consulted in the early 2023.

These databases, as well as the public list of startups supported by the ESA BICs, lack a common identifier. We relied on Orbis to univocally identify startups, on top of providing demographic information as well as balance-sheet and profit-and-loss account data, as described in Section 4.2..

Appendix 2

**Table 8** – Descriptive statistics, matched samples

	<u>Not supported</u>		<u>Supported</u>		$\Delta$	t-statistic
	Mean	Std.Dev.	Mean	Std.Dev.		
<i>Total assets; 94 non-supported and 71 supported startups</i>						
ln(Total assets)	3.83	2.63	3.85	1.78	-.0116	(-.032)
ln(Age)	1.3	.522	1.3	.33	.00138	(.0195)
ln(Num. patents)	.108	.462	.136	.404	-.0278	(-.404)
No VC-backing	1	0	1	0	0	
Upstream	.223	.419	.169	.377	.0544	(.861)
Country	Pearson's $\chi^2(15)$ : 7.502					
Application	Pearson's $\chi^2(5)$ : 1.686					