

A Work Project, presented as part of the requirements for the Award of a
Master's degree in International Development and Public Policy
from the Nova School of Business and Economics.

**THE ENTREPRENEURIAL STATE:
PORTUGAL AS A CASE STUDY**

**Unveiling Unicorn Success: An Evaluation of their Local Economic
Impact and the Role of Public Policies**

Carolina Pacheco Alves Pimentel Teixeira

53313

Work project carried out under the supervision of:

Brais Álvarez Pereira

01/10/2023

Abstract: This Policy Analysis Project (PAP) comprehensively assesses the opportunities and challenges of the Portuguese start-up ecosystem. It employs a combination of qualitative and quantitative research methods to study the role of the Portuguese public sector to support entrepreneurship. Chapter one sets the context, defines the problems and explains the theoretical framework that underpins innovation and entrepreneurship in European and Portuguese policies. The subsequent chapters analyse the ecosystem's dynamics and vibrancy, factors that contribute to start-up success, the evolution and impact of unicorns and R&D investment, while scrutinising the role of government incentives and discussing policy implications.

Keywords: start-up; unicorns; entrepreneurship; start-up ecosystem; incentives; impact; business sustainability; R&D; Public Policy; Innovation.

Table of Contents

1	<i>The Entrepreneurial Ecosystem and its Challenges</i>	4
1.1	Introduction	4
1.2	Background and context	6
1.2.1.	Innovation and The Role of the Public Sector	6
1.2.2.	The Importance of Public Policies	9
1.2.3.	Defining Start-Up Success	11
1.2.4.	Factors for Start-Up Success	12
1.2.5.	Public Policies in R&D	14
1.2.6.	The Problem with the Definition of Start-up in Policymaking	15
1.2.7.	The New Portuguese Legal Framework.....	17
1.3.	Overview of the Portuguese Start-up Ecosystem	18
1.3.1.	What Makes the Portuguese Ecosystem Attractive?.....	19
1.3.2.	Government Incentives in Portugal.....	22
1.3.3.	Evaluation of Government Programmes	26
1.4.	Theory of Change	27
4	<i>Unveiling Unicorn Success: An Evaluation of their Local Economic Impact and the Role of Public Policies</i>	30
4.1	Introduction	30
4.2	Literature Review	32
4.3	Conceptualisation & Methodology	35
4.4	Findings & Interpretation	36
4.5	Discussion	41
4.6	Conclusion	46
5.	<i>Conclusion</i>	48
6.	<i>Bibliography</i>	51
5	<i>Appendix IV: Interviews (Chapter IV & V)</i>	65

1 THE ENTREPRENEURIAL ECOSYSTEM AND ITS CHALLENGES

1.1 Introduction

The core objective of this Policy Analysis Project is to analyse the role of the Portuguese public sector and the recently implemented measures in supporting entrepreneurship and the development of the national start-up ecosystem. In doing so, it will identify opportunities and challenges the country faces. Chapter one will 1) define the context and the problem; 2) provide an overview of the theoretical framework on innovation and entrepreneurship that is key to European and Portuguese policy-making; 3) include a literature review on the significance of public policies in the ecosystem; 4) explain the issues with defining “start-ups” and the Portuguese legal framework; 5) explore the attractiveness of the Portuguese start-up environment; 6) describe recent public policies put in place in the EU and in Portugal. Altogether, Chapter 1 will be succinctly reviewed in the attached Theory of Change. The remainder of the report will examine whether the policies in place have, in fact, reached their goals and reveal critical issues to tackle.

The second chapter will explore the characteristics of the Portuguese Entrepreneurial ecosystem, exploiting the concept of “vibrancy” and building a cross-country comparison. Following the literature by Stangler and Bell (2015) and Stam (2015) four metrics will be proposed to provide new insights to shape the future policymaking process through quantitative analysis considering limitations in data availability, which will be highlighted and further discussed. The relevance of this application in the EU context is justified by the still immature literature surrounding the quantitative evaluation of policy outcomes and their influence on entrepreneurial ecosystems dynamics, mainly due to the lack of data availability.

Chapter 3 will then cover the policies that most contribute to the survival and success of start-ups. It will highlight the status quo of government incentives, what is currently lacking, and what are recommended policy actions to increase their effectiveness.

Furthermore, chapter four will focus on the extent to which the evolution of unicorns (start-ups with an equity value equal to or higher than one billion dollars) may be associated or result from public policies launched and these companies' weight in the local economy and business fabric.

The fifth chapter will observe Research and Development (R&D) investment in innovation and entrepreneurship, especially through the triple helix of academia-private-government investment in research, VC investment programs and private vs. public investment. Finally, the conclusion will provide policy recommendations, final remarks and limitations of the research.

Recent Portuguese governments' focus on start-up and digital development has sparked debate. It is fundamental to determine the effects of chosen policies if they have led to concrete positive changes, and if there are any gaps in their design. A comprehensive assessment of whether the broader economic environment assists the success of businesses is required to justify the state's effort in this sector, if it should be continued, and if other complementary policies or programmes should be implemented. Many institutional reports assess the ecosystem and its stakeholders, bodies and agencies. Nonetheless, this report will critically outline Portugal's policy challenges through quantitative and qualitative analysis, namely through secondary data and interviews conducted with experts from private, public and academic realms.

1.2 Background and context

1.2.1. Innovation and The Role of the Public Sector

“Innovation is not the end goal. Innovation is a means.” (Jardim de Oliveira 2023)

The Portuguese start-up ecosystem has expanded since the mid-2010s as individuals increasingly ventured into self-employment and entrepreneurship. Challenging circumstances have consistently been catalysts for innovation. The convergence of financial and sovereign debt crises, austerity measures and high unemployment rates provided an impetus for a “start-up revolution”. The COVID-19 pandemic and the ensuing economic upheaval further accentuated this trend (Pimentel 2021). Most notably, Portugal’s position as a tech innovation hub gained recognition through annually hosting the Web Summit – one of the largest tech conferences in the world – since 2016. Most recently, the commitment to innovation was reinforced as the top priority during the political campaign of the Mayor of Lisbon, a former European Union (EU) Commissioner for Research, Science and Innovation, culminating in the establishment of the “Unicorn Factory Lisboa” in 2022 (Programa Novos Tempos 2021).

Nonetheless, disparities persist among EU member states. Southern European countries have fewer leading innovators, particularly high-growth firms like unicorns. These are geographically and regionally concentrated in Germany, France and Sweden, particularly in their capitals, and have lately been consolidating in the Baltic States. Moreover, the EU’s capabilities are also significantly lagging behind the United States (US) and China. These gaps have encouraged successful Portuguese scale-ups to find alternatives in other countries, which can be attributed to a myriad of factors: lack of resources and capital, underdeveloped or small venture capital (VC) industries, a focus on early-stage financing or fragmented EU stock markets (Testa et al. 2022: 11, 44). Furthermore, innovation and start-up ecosystems work synergically. They are key for strategic autonomy and are instruments to reach priority objectives, such as sustainability and digitalisation. Innovation policy connects research,

technology and industrial policies and establishes frameworks whereby ideas can be introduced to the market (Polluveer, 2023; Testa et al. 2022). Therefore, a thriving and dynamic ecosystem requires robust innovation policies. However, to what extent should the public sector intervene in this field, if at all?

The concept of the Entrepreneurial State has been promoted by the economist Mariana Mazzucato, who has arguably been the most influential researcher on the EU's innovation policies. Her work defends the relevance of the state's role and its investment in driving innovation and reshaping the technological and economic paradigm together with the significance of cross-sector collaboration. At the core of Mazzucato's research is the objective of a "mission-oriented economy" to tackle collective challenges, such as climate change. Grounded on Polanyian, Schumpeterian and Keynesian arguments, Mazzucato contends that the state can establish and steer markets, hence showing that the public and private sectors are not entirely distinct entities (Jacobs & Mazzucato 2016; Mazzucato 2013).

First, Polanyi claims the state-market division is mythical since markets cannot be isolated from the interdependent political, sociocultural and legal contexts that embed and define them. Throughout history, the state has induced the creation of capitalist economies, as well as regulated, shaped and enforced the conditions for their efficiency (Polanyi in Jacobs & Mazzucato 2016: 30-31; Mazzucato 2013: 207-215).

Second, according to Schumpeter, innovation leads to "techno-economic paradigm shifts" ingrained and sustained by the socio-political structure, such as the state. It generates economic growth through industrial transformations and societal changes that act concomitantly. It prompts changes in the practices of established sectors or creates others while outlining the standards for normality and prosperity. Structural change is propelled by the "Creative Destruction" phenomenon, whereby new participants' innovations and novel

economic activities put an end to, displace, and create new industries (Schumpeter in Bos & Stam 2011, in Mazzucato 2013: 37).

Third, as per Keynes, private investment is prone to instability and speculation. Governments can direct markets to areas of strategic importance and act entrepreneurially beyond addressing market failures. Public sector investment can face high uncertainty and initial risks or the potentially long-term returns of innovation-led development that the private may be hesitant to engage with. Economic growth is possible through larger and riskier transactions made by the state that the private sector would likely avoid. To illustrate, US public funding was crucial to Information and Communication Technologies such as Apple and Google that have determined our contemporary technological landscape (Mazzucato 2013). It is possible to recognise European and Portuguese policies that can be attributed to Mazzucato's theoretical framework. These will be addressed later in the chapter under "Government Incentives in Portugal".

It is fundamental to view Mazzucato's argument critically since it is not a "silver bullet" and has not gone unchallenged. A European public official interviewed for this Policy Analysis Project, explained that her theory might not be that easily and practically applicable. First, it is idealistic to think that the public sector is less risk-averse since it will always encounter political scrutiny compared to private VCs, funds are not infinite, there are many checks and balances, and budget allocation and approval is a political process (Vicente 2023). Second, the interviewee also vocalised arguments corroborated by the economist Paul Krugman. The author has questioned governments' ability to identify or anticipate strategic sectors and argued that capital allocation cannot always overrun market dynamics. Outcome prediction is prone to failure as there may be vested interests that influence the industries chosen and lead to favouritism through "picking winners and losers" (Krugman in Bos & Stam 2011: 2).

These are typical criticisms of “vertical”, direct or targeted policies whose primary aim are to promote or protect certain sectors, contrasting with “horizontal”, indirect policies whose purpose are to stimulate general market competition (Bos & Stam 2011: 2). In the interview we conducted, the former Secretary of State for Entrepreneurship, Competitiveness and Innovation also advocated for the importance of systemic structures (e.g., judicial or fiscal) to facilitate business development, instead of the traditional financial support (e.g., subsidies) (Oliveira 2023).

1.2.2. The Importance of Public Policies

In 1942, Schumpeter developed the theory that entrepreneurial innovation is the result of creative destruction caused by entrepreneurs who transform resources through radical and marketable innovations. This view caused public policy to address factors such as taxation, labour, and monetary considerations that have the potential to influence these transformative processes (Guerrero & Urbano 2019). When talking about public policies in start-up support, we can distinguish between direct and indirect incentives, as well as hard and soft policies. Ramaciotti et al. (2017) describe hard measures, as a form of financial support mechanisms such as grants and loans, and soft measures, as mentoring and business advice services.

However, public policies play a crucial role in supporting start-ups and fostering a vibrant entrepreneurial ecosystem. Start-ups are the engines of innovation, economic growth, and job creation (Denes 2019). They introduce new products, services, and business models that can disrupt industries and contribute to overall societal progress through "the digital economy" as it is "all-encompassing and disruptive, inducing both a new round of entrepreneurial innovation booms and triggering paradigm shifts in entrepreneurial innovation" (Chen 2023). However, start-ups often face unique challenges and uncertainties that can hinder their growth. This is where well-designed public policies come into play to provide a conducive

environment for start-up success, which can "create and shape the market by implementing long-term strategies" (Li et al. 2023).

One example of the importance of policies for innovation in a country can be seen with the experiment of "Long and Liao" which "found that fiscal policy incentives (subsidies and tax credits) encouraged the innovation of manufacturers based on their survey of 265 Chinese firms" (Li et al 2023). It is important to understand the role public policies have on the start-up ecosystem as it affects various areas, which can make or break an innovative ecosystem this is the reasoning for "The promulgation of multiple policies aims to form a formal institutional environment to promote an innovation-friendly social system" (Li et al. 2023). This is observed in the study conducted by Li Youjia amongst other where they found that "Chinese policy incentives indeed drive innovative activities and enhance the innovative capabilities and performance of high-tech start-ups" (Li et al. 2023).

Policies for supporting start-ups can range from infrastructure and resources, IP protection, talent attraction and retention, market access and support, internationalization, data protection and privacy, support during economic challenges, and ecosystem growth. One kind of policy support is through education, this support is important to foster an entrepreneurial mindset and give tools for the population to introduce themselves to the Start-up market. According to Duong "entrepreneurial government policies and programmes can foster the transition of the entrepreneurial attitude and intention into start-up behaviour" which in turn can, encourage an "entrepreneurial ecosystem for new enterprises" (Duong 2022). In terms of fiscal policies, there are two main areas in which government policies can act, one is subsidies and the other is tax incentives. In most countries "Government subsidies for innovative activities are common" as the theory suggest that this can solve "market failures" (Xu et al. 2023). Yet, in the study conducted by Xu amongst others, they claim that "government subsidies decrease corporate green innovation efficiency while tax incentives promote it" (Xu

et al. 2023), showing the importance of governmental policies as its misuse can cause decrease in effectiveness, and can hinder growth in the Start-up sector.

Furthermore, the research paper by Berger et al. (2021) examines the positive impact of public subsidies also on follow-on funding, particularly on their influence on venture capital (VC) funding. The study is notable for providing a particular understanding of how different sources of VC value public start-up subsidies differently. Most importantly, the study distinguishes between different types of investors, each with different investment strategies and they describe that the link between start-up subsidies and access to external resources are not limited to specific countries. They conclude that it is likely that public start-up subsidies play an important role as an initiator of start-up success.

1.2.3. Defining Start-Up Success

The study of what makes entrepreneurs successful is still relatively new (Lowder 2009) and the literature lacks a unanimous agreement on the definition of success for start-ups. The concept of start-up success encompasses various facets and is influenced by various theoretical perspectives and empirical circumstances (Díaz-Santamaría & Bulchand-Gidumal 2012). The concept of success has been interpreted differently in various academic disciplines such as empirical economics, psychology, and sociology (Van Praag 2003). One definition can be that start-up success is the achievement of sustainable growth, profitability, and a positive impact in the market by a newly established business (Binowo 2023). Scholars have used a range of performance indicators such as return on equity, business survival rate, self-employment income, firm size, or firm growth. In addition, more modern views have emerged that introduce measures such as workforce expansion. Similarly, subjective measures of individual business success have gained prominence in recent years, reflecting the multi-faceted nature of success concepts in the literature (Fomin 2020; Schiller & Crewson 1997; Bates 1995; Cooper et al. 1994; Brännback et al. 2010; Fried & Tauer 2015).

Van Praag (2003) emphasizes that there is no single, universally accepted definition or measurement of success in self-employment and offers an alternative perspective on the definition of startup success: *Success depends on the ability to sustain business operations over time and avoid involuntary closures*. Key performance indicators represent a series of indicators that capture the most important performance aspects for the current and future success of an organization (Van de Ven 2022; Parmenter 2020) but beyond achievements and quantitative assessments, one can also argue that success comes from a combination of mission and meaning – and the individual behind the company (Hani 2021).

1.2.4. Factors for Start-Up Success

It's important to note that success for start-ups can be defined in various ways, as it depends on factors such as the industry, goals, and aspirations of the founders. In the first instance we have to observe the problem, as "The foundation of a start-up should be based on the problem that needs to be solved". Due to the problem being a main driver of the start-up objective, as "it is not suggested to take the courage to launch a one based merely on interest or hobby", meaning it needs to have a specific objective which solves a market problem to achieve success. In addition to this, a start-up needs to have "Experiences that can be used as inspiration for ambitions to address societal needs and challenges give rise to business concepts", in such a way that the challenges can be solved by the start-up and not just grazed in the surface (Binowo 2023).

Team structure is key when discussing start-up success. The team needs to have a mentality according to the founder as it is "it is advisable to have a team with the same vision and mission, because all work in the start-up will be light and it can bring success in starting a start-up" (Binowo 2023). Showing the importance of having a common value chain, and a team which follow the same mentality to succeed. Start-up failure also relates to mentality and team, as one of the for this is "the choice of an unsuitable "Team"" and the "inadequate

implementation of soft skills as managerial and commercial experience of the founders" (Sevilla et al. 2022). Another aspect for a successful start-up is its business model. As it "can be arbitrary", meaning the business model does not suffer from a preset unchangeable model. This is a positive for a startup as it allows it to "change it and adjust to a proper model to survive" (Binowo 2023), giving fore flexibility in the face of adversity.

One of the most important aspects to achieve success lies in VC funding, this topic in relation refers to the fifth chapter of the report. In which it is discussed the importance of VC funding, in relation with R&D. As one key aspect of start-up creation is the "capital or funding is needed in the early stages of pioneering and is a significant element when starting a start-up" (Binowo 2023). Moreover, capital funding goes hand by hand with the value proposition of the business model as observed in the German case the "German VC investors consider a convincing value proposition to be the most relevant component for the success of digital start-ups" (Shumacher 2022). As the value proposition is the " core component of the business model" and can show an investor the potential of the star-up (Shumacher 2022). Access funding is an important factor in start-up creation, as it allows for the quick growth of a start-up and covering running cost of the business as "capital or funding is required to cover the shortcomings" and its presence will " the start-up will continue to operate" (Binowo 2023).

Another success factor for start-up creation comes in the form innovation "measured by the new products or services offered by an enterprise but also by new and more efficient ways of developing, producing or delivering products or services" (Baldacchino et al. 2008). Successful innovation comes with a product or service that can "meet customer needs instantly" as the " product selection must be able to answer the problems that are occurring" and which the start-up is trying to solve. Furthermore, incubators are an important factor in start-up creation as they "are factors that can make the start-up's pioneering process successful" (Binowo 2023). The incubator is a tool to "increase the chance of a start-up surviving its

formative years " which allow for start-up growth and eventual creation of scale-ups (Wu et al. 2022).

Finally, start-ups require market validation next to competition. The importance of market validation allows "to find out the existence of people who are ready to pay for products from start-up business ideas". Allowing the start-up to develop and target its market, while also identifying the need for the product. Whilst competition functions as a driver for innovation, "competitors are needed because competitors can encourage innovation and improvement of the quality of start-up products and services" (Binowo 2023).

1.2.5. Public Policies in R&D

Through R&D efforts, new technologies, products, and processes are developed, spurring productivity gains and competitiveness. Public policies are instrumental in fostering Research and Development (R&D) within a nation, as public policies can affect the way R&D develops. The way policies have been implemented vary, yet can be "divided into two groups", the first one being "direct investment in R&D" while the second form of policy can be seen as "promotion of investments through appropriate measures, subsidisation, fiscal policies" (Ginevičius 2022). The impact for either kind of policy regarding R&D has been thoroughly analysed yet has not been decided on a better way of R&D policy. As experts in some areas indicate that, subsidies and fiscal policies "are more effective than direct investment" yet other claim that "increasing government investment in R&D stimulates economic growth" (Ginevičius 2022). This shows a dichotomy in the opinions between experts on the matter of the best way of supporting R&D, dichotomy which will be able to be observed later in Chapter 5 which discusses precisely on the topic of R&D and observes in dept the opinion of various experts on the matter.

1.2.6. The Problem with the Definition of Start-up in Policymaking

At the outset of this research, the primary objective was to quantitatively assess government support mechanisms in the context of the Portuguese start-up ecosystem, and their impact on the country's economy and society. It is important to note that a major challenge is the lack of a unified and universally accepted definition of the term "start-up", which is prevalent in Portugal and in several other countries. This lack of standardized criteria is a fundamental obstacle that needs to be carefully examined, as it affects the comparability and accuracy of quantitative results. Furthermore, it is also a problem in terms of public support since tax incentives, for example, are based on data that do not exist. Thus, this lack of definition influences the public support of start-ups which should not be underestimated.

The absence of an official and widely accepted definition of “start-up” has always been cause of inconsistency among literature, databases, and regulation (Ehsan 2021). While small and medium-sized enterprises (SMEs) are defined in the EU recommendation 2003/361, according to the staff headcount and either firm turnover or balance sheet total (SME Definition, 2023), there isn't any default answer to the question: “What is a start-up?”. Interviews reveal a prevailing trend where founding start-ups has gained popularity as a fashionable endeavour, with many individuals eager to join the entrepreneurial ecosystem, even in cases where no tangible market opportunities or substantial challenges warrant the establishment of a start-up.

This observation, compounded by several other factors, suggests a need for more defined criteria to delineate the concept of a "start-up." Such criteria serve as valuable tools for governments seeking to allocate public funds strategically, promoting economic growth and higher employment rates. Governments can enhance the effectiveness of their support initiatives by concentrating resources on promising start-ups within specific industries. Additionally, implementing clear and specific criteria would empower early-stage

entrepreneurs with a better understanding of the conditions their projects must meet to qualify as start-ups. This, in turn, would streamline the application process for policy support measures. The interviews also highlight common obstacles start-ups face, including uncertainty about eligibility criteria, lack of transparency in application procedures, limited comprehension of technical jargon, and last-minute awareness of available programs, all of which deter start-ups from seeking public assistance.

In the EU Monitor, there is no official definition for start-up since the legal framework mentioned in the previous paragraph includes SMEs only. Instead, they provide three criteria on which the concept of start-up should draw, namely age (younger than ten years/ five years, depending on the sector); innovation (in product, service or business model); aim to scale (intention to grow number of employees and/or markets operated in). Generally speaking, in the majority of European countries, there is no legal definition of a start-up. However, some of them started very recently to draft or implement law proposals to narrow the scope of bureaucratic advantages and tax incentives.

Indeed, tax incentives are probably one of the most relevant issues related to the definition problem. For instance, in Italy, the absence of a clear-cut definition for start-ups means that those not categorized as "innovative" cannot benefit from the advantages of tax incentives. This lack of precision in data collection, particularly in publicly accessible datasets, hinders government bodies from formulating policy adjustments aimed at supporting start-ups, primarily because it's impossible to estimate the impact on the public budget. Additionally, this poses a hindrance to conducting quantitative impact assessments and monitoring the outcomes of policy measures.

According to Graham (2012), *“Being newly founded does not in itself make a company a start-up. Nor is it necessary for a start-up to work on technology, or take venture funding, or have some sort of “exit.” The only essential thing is growth. Everything else we associate with*

start-ups follows from growth." This definition, which comes from the essay "Start-up = growth" is supported by the Dealroom platform in one of their most recent articles about the problem of the definition.

1.2.7. The New Portuguese Legal Framework

In 2022, the Portuguese Government approved a draft law n.56/XV to be presented to the Assembly of the Republic, defining the legal concepts of start-ups and scaleups for the first time. This law establishes a distinctive framework for forward-looking companies in Portugal that prioritize growth through digitalization and innovation. Under this new legislation, a legal entity can be classified as a start-up if it satisfies the following criteria: a) It has been in operation for less than 10 years. b) It employs fewer than 250 individuals. c) Its annual turnover does not exceed 50 million euros. d) It did not emerge through the transformation or division of a large enterprise and does not have majority ownership by a large company, either directly or indirectly. e) It is headquartered in Portugal or maintains a permanent representation there, or it employs a minimum of 25 workers within Portugal's borders. Furthermore, to qualify as a start-up, the entity must meet one of the subsequent conditions: (i) It demonstrates innovation potential and is characterized by innovative business models, products, or services. (ii) It has successfully completed at least one round of venture capital funding through a legally authorized entity. (iii) It has received investment from Banco Português de Fomento, S. A., or affiliated entities, including its subsidiary companies or equity instruments, as detailed in the full text found in the Appendix.

To accommodate the unique characteristics of start-ups and scaleups, the taxation regime for option plans (stock options) in the innovation sector is modified. The proposed change ensures that taxation happens when the income is actually realized. Moreover, the new legislative framework aligns with the European Union's EU Start-up Nations Standard of Excellence Declaration, reflecting one of the Government's priorities. The approved draft law

also strengthens the tax incentives in research and business development (SIFIDE II), which aims to encourage investment in R&D and further boost innovation, entrepreneurship, and productivity in the country.

However, even such a new legal recognition does not provide a unitary framework for European start-ups and those worldwide, given that its principles only apply at a national level. Considering the actual level of business internationalization, and how fast start-up hubs relocate abroad or move their headquarters across the globe, a universal definition of what exactly a start-up is should be a priority for the EU Agenda in the near future.

Moreover, there is evidence that some industries such as Deep Tech or Biotech (Wijiaangarde 2021), should benefit from additional advantages while being regulated, given the nature of the business and the slower growth rate. From insights gathered during interviews, there is a consensus that funding program eligibility criteria need greater clarity. Often, individuals invest substantial effort in the application process only to realize that their businesses do not align with the established criteria. Furthermore, questions arise regarding whether the current definition adequately reflects the essence of start-ups, as it has been determined without engaging with start-up stakeholders. Additionally, interviewees have suggested that certain industries, such as Biotech, should receive specialized incentives distinct from those provided to typical start-ups due to their unique demands for extended growth timelines and additional resources.

1.3. Overview of the Portuguese Start-up Ecosystem

The "Global Start-up Ecosystem Report 2021" positions Lisbon as one of the world's most promising start-up emerging ecosystems, specifically at the 17th place in the ranking (Marmé 2021). The significance of scalable start-ups as the drivers of economic growth and job creation is becoming more evident across various global markets. On average, start-ups

experience three times faster growth than the traditional economy and have contributed to a 10% increase in global job opportunities¹ since 2017 (Wijngaarde 2021).

The data contained in this paragraph comes directly from Dealroom and is based on reported data. Data reported is as of August 3, 2023. There have been remarkable developments in the field of venture capital investments in Portugal in recent years. The country is home to a total of 5,399 companies (not only start-ups) participating in the entrepreneurial ecosystem. In 2019, a total of \$233 million in venture capital funding was invested. However, the subsequent year, 2020, witnessed a dip in funding, amounting to \$201 million, possibly influenced by the covid-19 pandemic. Despite the challenges of the previous year, the entrepreneurial landscape rebounded impressively in 2021, with total venture capital funding soaring to \$504 million. The year 2022 further solidified Portugal's position as an attractive destination for venture capital, as the total funding reached a record \$831 million (dealroom.co). This significant upswing showcased the nation's evolving entrepreneurial potential and the growing recognition of Portugal as a hub for innovation and promising business ventures.

IAPMEI, the Agency for Competitiveness and Innovation (Agência para a Competitividade e Inovação IP), under the Ministry of Economy plays a pivotal role in the ecosystem. The aim of the institution is to support and improve competitiveness, growth and development of small and medium-sized enterprises (SMEs) in Portugal. To this end, they develop and implement instruments and programmes to strengthen innovation, entrepreneurship, and business investment in the SME sector (EISMEA 2023; AMA 2023).

1.3.1. What Makes the Portuguese Ecosystem Attractive?

By examining in-depth interviews with key stakeholders and perspectives from reputable online articles, this section aims to uncover the unique factors and qualities

¹ As estimated by Dealroom data.

contributing to Portugal's start-up ecosystem as an attractive destination for entrepreneurs, investors, and innovators. Why do individuals choose Portugal to found start-ups? In the last decade, several factors contributed to Portugal's appeal as a place to start and grow a business:

i. Supportive ecosystem: Portugal's start-up ecosystem was evolving rapidly with numerous co-working spaces, start-up incubators, and accelerators offering mentorship, funding, and networking opportunities. The government also supported entrepreneurship by creating policies and initiatives to encourage innovation.

Launched in 2016, Start-up Portugal was a comprehensive strategy designed to foster the growth of the country's start-up ecosystem and promote entrepreneurship and innovation. The program aimed to provide a range of support measures to start-ups and entrepreneurs, including access to funding, mentorship, networking opportunities, and internationalization support (IAPMEI 2018). It also sought to attract foreign entrepreneurs to Portugal through the Start-up Visa program, encouraging them to establish innovative businesses in the country. Among the other support instruments, the policy included the Start-up Voucher program, to provide financial support and mentoring for early-stage entrepreneurs and the Co-investment Fund to encourage more venture capital investment in innovative companies. Start-up Portugal played a crucial role in consolidating Portugal's position as an emerging destination for start-ups, with the ultimate goal to drive economic growth and job creation while fostering innovation and technological advancement. In addition, Portugal is defined by many entrepreneurs as a collaborative environment, where people are willing to help each other and prone to networking, which is extremely helpful for new businesses to set up. The willingness to collaborate in B2B is also relevant especially for Fintech, while it is not the same in other countries like Spain.

ii. *Cost of living: Compared to many other European countries, Portugal has a relatively low cost of living, making it more affordable for entrepreneurs and start-up teams to live and work there.*

The cost of living in Portugal is almost 60% lower than that of the USA, and the rent reaches half the value there (Fortinho 2023). For those who continue to benefit from a foreign wage or savings account, the purchasing power is even stronger, making it more affordable to pay rent in the bigger cities like Lisbon and Porto, whose prices have been steadily raising due to the increasing demand. Moreover, our interviews reveal that some businesses choose to move their offices in Portugal because of the competitiveness of the base salary.

iii. *Quality of life: Portugal is known for its pleasant climate, beautiful landscapes, and rich cultural heritage. The high quality of life and work-life balance it offers could be appealing to start-up founders, skilled workforce, and international talent.*

According to the HSBC Expat Insider 2017, Portugal has the best quality of life worldwide for expats. People who move to study and work in Portugal, define it as an easy place to settle in, particularly appreciating the safety, the climate, and the lifestyle. Indeed, the Portuguese particularly value the work-life balance.

iv. *Strategic location: Portugal's location within the European Union offered start-ups access to a larger market and potential customers within the EU.*

The start-ups funded by the EU represent some of the most promising sources of innovative companies, equipped with developed products and significant potential for scaling up. Grant funding plays a crucial role in de-risking these start-ups, providing them with clean cap tables and supporting their cutting-edge innovations, which have transformed from ideas into tangible realities with excellent growth prospects (dealroom.co).

v. *Language speakers: The level of English among the population is very high, especially in urban places.*

The English Proficiency Index has ranked Portugal 7th out of 88 countries. From our interviews, a common fact that emerged is that it is easier for English speakers to find a job in Portugal than in other European countries, where jobseekers are more likely to have a chance only if they are fluent in the local language.

vi. *Qualified and “affordable” talent.*

According to statements made in interviews, there is a noticeable disparity between technical education in Northern Portugal, which is more prevalent, and the focus on management in the South, leading to a perceived gap between the two. Moreover, it was mentioned that the decision to scale back operations in other European countries was driven by the lower cost of the workforce in Portugal, which is considered a substantial comparative advantage, especially for start-ups in their early stages.

1.3.2. Government Incentives in Portugal

The Portuguese government has put in place many policies directed at the development and consolidation of the start-up ecosystem that relate to funding and the provision of novel opportunities. For instance, access to capital has been a priority through Voucher programs, the “200M Co-matching Fund, Social Innovation Fund, Portugal 2020/2030, Empreende XXI, Semente” and opportunities like the “Start-up Visa”. Capacity-building projects include the increase in training and infrastructure through incubators, accelerators, as well as the programmes such as “Business Abroad” (Start-up Portugal 2023e).

Start-up Voucher

Start-up Vouchers is a program born in 2016 and managed by IAPMEI, a partner of Start-up Portugal since 2018. The policy is one of the measures of Start-up Portugal that aimed to boost the development of business projects in the idea phase through various support tools available over a period of up to 12 months for the preparation of the business project. Start-up Voucher provides various support tools to help young entrepreneurs prepare their business

projects. To be eligible for the Start-up Voucher program, the projects must benefit certain regions in Portugal. Innovation vouchers are an indirect subsidy worth up to a pre-defined monetary value meant to allow small and medium sized enterprises (SMEs) or young entrepreneurs to access academic skills and expertise to improve the innovation capability of their business and to build links with public sector Knowledge Providers, such as the universities, colleges, technology institutions or research organizations (Invest Northern Ireland 2021). The Start-up voucher program offers three different instruments: a monthly grant, access to a network of mentors who provide guidance to the promoters during the duration of the grant period, and awards (IAPMEI 2022).

Vouchers for Start-ups

Another government incentive in Portugal is Vouchers for Start-ups. It is a financial support for early-stage businesses to invest in R&D and help them in growing faster. Eligible are young people between 18 and 35 years. They can apply for funding in the form of various support tools over a period of up to 12 months (Start-up Portugal 2023a).

200 M Co-Matching Fund

Co-investment financing is facilitated by the 200M Co-matching Fund, an initiative managed by PME Investimentos (Portuguese Development Bank). The main objective of this initiative is to promote joint investments in emerging, high-growth, innovative start-ups in Portugal involving reputable national or international private co-investors. Co-investors are invited to apply through a dedicated online platform. The fund is particularly aimed at start-up in the life sciences, biotechnology, IT, digital technology, tourism, engineering, and companies oriented to the principles of Industry 4.0. The online platform serves as a hub for engagement, while the fund emphasizes its focus on start-ups in the above sectors (Start-up Portugal 2022).

Social Innovation Fund

The Social Innovation Fund was established to achieve social impact through investment. This initiative represents a new policy mechanism and is strategically designed to increase impact-oriented investments across Portugal. Its main mission is to support innovative projects that effectively address societal challenges while demonstrating sustainability and the ability to deliver positive outcomes for communities. The selection framework is guided by the United Nations Social Development Goals and focuses on projects that can make a significant contribution to these goals (Start-up Portugal 2022).

Portugal 2020/2023

Under Portugal 2020/2023, incentives are designed to encourage investment in product innovation, drive skilled entrepreneurship, and facilitate the growth of ventures characterized by robust technological components. This framework includes various financing incentives designed to support entrepreneurs at different stages of their entrepreneurial activity (Start-up Portugal, 2022).

Empreende XXI

Empreende XXI is a program designed to help entrepreneurs start, promote and finance their new business. The program was developed in collaboration between the Institute for Employment and Vocational Training (IEFP) and Start-up Portugal (Start-up Portugal, 2023b).

Semente

The Semente Programme aims to create a more favourable fiscal framework through granting tax incentives to early-stage investors for the capital gains acquired from these investments. It provides personal tax benefits (IRS) on invested capital, amounting to 25% of the initial investments, with a ceiling of 100 thousand euros (Start-up Portugal 2023c).

Start-up Visa

In addition to funding opportunities and other government support instruments, there is also the Start-up Visa initiative. This program offers the possibility of a residence visa to non-EU Schengen entrepreneurs who want to immerse themselves in the Portuguese start-up ecosystem. Organized by IAPMEI and facilitated by the National Network of Incubators, this initiative connects companies and offers insights into the Portuguese and European market (Start-up Portugal 2022).

Business Abroad

The “Business Abroad” programme’s principal objective is internationalization of Portuguese start-ups through ensuring and supporting their presence attendance in global events, that may lead to important networking, higher impact abroad and communication coordination with foreign press and media (Start-up Portugal 2023d).

The implemented policies illustrate the Portuguese public sector’s effort to be entrepreneurial and a proactive driver of innovation. This is especially notable in the increase in the availability of capital through public or public-private partnerships for investments through voucher programmes and funds (e.g., 200M Co-Matching Fund). It is also clear that there have been targeted and strategic policies directed at Digitalisation and Sustainability, as well as an increased focus on R&D and infrastructure development. Mazzucato’s paradigm on research and innovation is also evidently translated into European policymaking. The EU’s Recovery Plan, “Next Generation EU”, has many relevant measures. For instance, “Horizon Europe” is a new mission-oriented approach that entails enhanced scientific research through new infrastructures, together with a strengthened European Research Council and Joint Research Centre. It reinforced its innovation capabilities through the European Innovation Council (EIC) and the European Institute of Innovation and Technology. Most notably, the EIC’s core aim is to dynamically support projects that are too risky for the corporate sector. It

creates new markets, influences private finance and scales-up businesses while providing grants for those at pathfinder, transition or accelerator stages (European Commission 2021).

The European Investment Bank and the European Investment Fund also provide risky funding to disruptive and innovative projects. Thus, there have been instituted bodies and frameworks that align with the importance of the state in financing high-risk innovation projects with social impact that can lead to economic growth. Second, the EU has set benchmarks and deliverable targets within timeframes, such as the carbon neutrality objective for 2050 and set up a strategic industrial policy focused on digital and green sectors across different institutions. The union has adopted a renewed approach to partnerships, encouraging cooperation between the private, public and academic fields, echoing Mazzucato's concept of a dynamic innovation ecosystem (European Commission n.d.; Vicente 2023).

1.3.3. Evaluation of Government Programmes

Innovation vouchers schemes were first implemented in the Netherlands (Flanagan et al. 2010) to connect SMEs with knowledge and technology suppliers (Roelandt & van der Wiel 2020). The successful long-term outcomes registered in the country on business survival rate, increase in R&D and employment led governments in other countries to promote similar programs, especially to support SMEs committed to bring technological advancement and cleaner solutions in the early stages of development. However, there is a significant gap in the literature for what concern their evaluation, especially when it comes to identifying causal relationships between support policies and outcomes.

Vouchers are usually described as promising tools to increase business outcomes, with fast procedures and non-repayable funds, that could mainly consist in grants to be invested in innovation-related expenses. However, evidence showed that financial incentives alone might be insufficient, and that Start-ups might need guidance in how to properly use and take the most out of these funds (Garvin & Margolis 2015). Nowadays, a big focus is also put on

incentives such as access to training or mentoring network (Langhorn 2014) or other indirect incentives, like the development of managerial or technical skills, or serendipitous results (Caragliu et al. 2022). As research on start-up-valuation may suffer from lack-of contextualization (Berre & Le Pendeven 2022), the opposite applies for the literature related to innovation vouchers (Caragliu et al. 2022), since the programs are very specific and tailored to the start-up ecosystem of each country. This intrinsic diversity makes it harder to confirm the external validity of the findings and to come up with general recommendations for the government. Furthermore, also the “effectiveness” of innovation vouchers as a policy instrument might be measured with different KPIs in each study, that is why results can hardly be generalized to make cross-country or policy comparisons.

1.4. Theory of Change

The Theory of Change (figure 1.1) presented in this thesis outlines a pathway towards fostering a vibrant start-up ecosystem in Portugal, underpinned by government incentives. The primary aim is to showcase how developing a robust start-up environment can yield positive outcomes for the Portuguese economy. By fostering this ecosystem, several positive changes are expected to occur. These include creating more jobs, stimulating economic growth through innovation, promoting sustainable development, and generating positive social impacts.

The expected outcomes of this theory are multi-faceted. They include a higher start-up survival rate, a strengthened innovation ecosystem, improved national reputation leading to increased credibility with investors, improved access to global markets, increased digitization and technology adoption, positive business changes with the potential for start-ups to scale up and achieve unicorn status, increased global competitiveness, and more domestic and foreign investment. These outcomes are to be achieved through a number of key measures, including providing capital to start-ups through facilitated investment; disbursing grants, subsidies, loans, and seed capital; offering training, mentoring relationships, networking opportunities, and

practical tools; facilitating the recruitment of global talent; and enabling remote companies to collaborate.

This Theory of Change rests on various inputs, including government support mechanisms like funding initiatives (such as the 200M Co-matching Fund, Social Innovation Fund, and Portugal 2020/2030), capacity-building programs for entrepreneurship and innovation, the establishment of incubators and accelerators, and the creation of opportunities like the Start-up Visa, Tech Visa E-Residency 2.0, and Road 2 Web Summit. Policies focus primarily on policy instruments tailored to support both entrepreneurs and the broader ecosystem. However, this path is not without challenges, as it highlights obstacles such as limited access to capital, weak infrastructure, fragmented collaboration networks, lack of entrepreneurial skills and culture, brain drain, and limited market opportunities. The core problem addressed by the Theory of Change is the low survival rate of start-ups, their limited scaling within the ecosystem, and the comparatively lagging development of start-ups in Portugal in the broader context of the European Union, and of the latter compared to the ecosystems of the United States and China.

IMPACT	<p>The Portuguese economy will benefit from a dynamic start-up ecosystem: Job creation and Innovation-driven Economic Growth Sustainable Development, Positive Social Impact and Economic Resilience</p>				
OUTCOMES	Higher Start-up Survival Rate	Strengthened Innovation Ecosystem	Advanced National Reputation and Credibility among Investors	Improved access to Global Markets (e.g. higher export/trade activity)	
	Increased Digitalization & Technology Adoption	Increase in Global Competitiveness	Higher Domestic and Foreign Investment	Positive Business Outcomes: Start-ups to Scale-ups (Potential for Unicorns)	
OUTPUTS	Capital Injection: Facilitated Investment, Disbursement of grants, subsidies, loans, seed funding		Training, Mentoring Relationships, Networking, Events; Practical tools; Increase in Market access, enhanced entrepreneurial culture	Global talent attraction and remote business enabled: Facilitated International Exchange and Collaboration	
INPUTS	<u>Capacity Building</u> : Business Abroad; Incubators & Accelerators; Infrastructure development	<u>Funding</u> : 200M Co-matching Fund; Social Innovation Fund; Portugal2020/2030; Start-up Vouchers (Green and Digital Products); Empreende XXI; Semente...		<u>Opportunities</u> : Start-up Visa, Tech Visa E-Residency 2.0, Road 2 Web Summit (R2WS)	
INTER-VENTIONS	Policy Instruments to Support Entrepreneurs and the Ecosystem				
BARRIERS	Limited Access to Capital and Financial Resources	Weak Infrastructure	Restricted Market opportunities	Fragmented Support Network and Collaboration	Lack of entrepreneurial skills and culture; Brain Drain
PROBLEM	<p>Low Survival Rate of Start-ups Limited Scaling of Start-ups within the Ecosystem Portugal's Lagging Start-up Development within the EU ecosystem, and in turn the EU's compared to US and China</p>				

Figure 1.1 – Theory of Change

4 UNVEILING UNICORN SUCCESS: AN EVALUATION OF THEIR LOCAL ECONOMIC IMPACT AND THE ROLE OF PUBLIC POLICIES

4.1 Introduction

This chapter focuses on the evolution of the number of unicorns, their weight in the local economy and business fabric and to what extent this success may be associated with or result from the public policies launched in Portugal. The growth of “unicorn” companies is a recent phenomenon. The term was coined by Aileen Lee (2013) when describing innovative or tech companies that have reached \$1 billion valuations in public or private markets. Their leading sectors include fintech, e-commerce and market technologies (Testa et al. 2022: 15). While data from platforms like Dealroom indicate that there is only one Portuguese unicorn, there is a commonly held perception that there are seven. This imprecise understanding may be attributed to factors like founders’ nationality, or the number of workers based in the country. In chronological order of reaching the billion-dollar valuations, these are:

1. Farftech is a luxury fashion platform. It was founded in 2007 in London, United Kingdom (UK), where its headquarters remain. It exited or became public through an IPO in 2018.
2. OutSystems is a low-code app development software. It was founded in 2001 in Lisbon, Portugal (PT), and its current headquarters (HQs) are in Boston, United States (US).
3. Talkdesk is an international cloud contact centre provider for customer experience. It was founded in 2011 in San Francisco, California, US, where it still has its central offices.
4. Feedzai is an artificial intelligence and machine learning software that fights financing cybercrime, such as bank fraud, and ensures online commerce’s security. It was founded in 2011 in Coimbra, PT, where it still has its main offices.

5. Remote is a human resources service platform serving as an intermediary between companies and workers globally. It was founded in early 2019, and its HQs are in San Francisco, California, US.
6. Sword Health is a digital health platform that provides physical therapy. It was founded in PT in 2015, while its HQs are now in New York, US.
7. Anchorage Digital is a regulated cryptocurrency platform offering institutions financial and infrastructure solutions. It was founded in 2017 in San Francisco, California (US), where it is still based (Crunchbase n.d.).

These unicorns' joint valuations are comparable to one-third of the country's gross domestic product and correspond to 86% of the overall valuation of Portuguese-founded start-ups (IDC & Start-up PT 2022: 33, 77). With the exception of Feedzai, these companies do not have their HQs in PT. However, their founders and technology have "Portuguese DNA" (Pimentel 2021, 51). They were all established by Portuguese nationals who were not only raised in PT but who also completed university studies at institutions like Instituto Superior Técnico, Universidade de Aveiro, Universidade do Porto, Universidade Nova and Universidade de Coimbra.² These terms will be used interchangeably for this research, as these ties may have led to significant national socioeconomic outcomes. As mentioned in the first chapter, there are regional disparities in unicorn growth across the EU. Southern European countries have the lowest rates of innovators, exacerbated by the relocation of successful scale-ups' HQs, such as to the US or UK. PT exhibits characteristics of a limited market size within the context of the global economy, yet the rate at which this resettlement happens illustrates that the ecosystem still requires more resources to retain high growth and successful companies (Testa et al. 2022, 11).

² Founders: Farfetch – José Neves; OutSystems – Paulo Rosado; Talkdesk – Co-founded by Tiago Paiva and Cristina Fonseca; Feedzai – Nuno Sebastião; Remote – Co-founded by Marcelo Lebre; Sword Health – Virgílio Bento; Anchorage Digital – Co-founded by Diogo Mónica.

There are exogenous and endogenous factors for unicorn success that work in tandem. These relate to the company characteristics' such as the team, its management strategy and partners, but also the environment in which it is embedded (Kabbara & Hagen 2023). The following sections will thus analyse key entrepreneurship components – the state's role as core to the national ecosystem and unicorns' impact. There is scarce academic literature on their global and local impact on economic development and whether the public sector was relevant in their growth, especially in Portugal. Limited data has maintained processes unclear and difficult to quantify (Susilo 2020, 146). Considering that most unicorns are not based in PT, many dynamics remain to be discerned. This evaluation will complement existing knowledge and provide crucial insights for accountable, responsible and evidence-based policymaking.

4.2 Literature Review

There have been many established public policies to foster innovation and start-up development. As discussed in Chapter One, they relate to the availability of capital through new funds, vouchers and tax benefits for investors; capacity building via incubators and accelerators; and new opportunities (e.g., visas). In Pimentel's (2021) account of the history of Portuguese unicorns, which until then only included Farftech, Outsystems, Talkdesk, Feedzai and Remote, the discussion on their paths to success evidenced that they were mainly shaped by private investment and had not involved the public sector. Thus, it is worth investigating whether the latest unicorns – Sword Health or Anchorage Digital – received public assistance.

Nevertheless, the expansion of these businesses may have prompted industry growth or a more dynamic and sustainable start-up ecosystem, resulting in increased engagement and intervention from the public sector within this domain. Their impact on economic development may be recognised through several channels. First, they can increase innovation, competition, productivity and economic diversification (Yusuf 2023, 1-5). For instance, PT could decouple from its reliance on services like tourism, which is currently equivalent to 18% of employment

and 15% of GDP (IMF 2022). These leading players can reshape and reconfigure investments, markets and industries, for instance, through their considerable investment in intangibles (e.g., R&D) that can stimulate efficiency and innovation among incumbents. Second, they can create more and better jobs with competitive salaries, raising local income levels and, in turn, consumption and economic activity. They can attract local and foreign investment, start-ups, companies and entrepreneurs (talent), promoting the country's visibility and competitiveness. There are vertical spill-overs through new opportunities for enterprises in local supply chains and horizontal spill-overs through knowledge-sharing, training and networking that have economic value. Unicorns may tackle social and environmental challenges, as well as participate in infrastructure development, charitable non-profit projects or public service initiatives (Bock and Hackober 2020, 975; Carrillo et al. 2014; Eckert 2022; Susilo 2020; Testa et al. 2022; Yusuf 2023, 1-5). Essential to the Portuguese context, unicorns can play a role in talent retention. Thus, unicorn and ecosystem development is a mutually reinforcing cycle.

Likewise, Prohorovs (2020) argues that in countries with smaller economies and populations, the primary inducer of start-up ecosystem development is the occurrence of sizeable exits – significant liquidity events – by unicorn companies due to “serial entrepreneurship”. Founders may engage in local re-investment, support and share knowledge with other start-ups and be role models by motivating national entrepreneurs. They may act as new players – business angels, venture capitalists, advisors, mentors, consultants, and board members – or establish new support programmes and bodies such as incubators and accelerators. The unicorn label also functions as a marketing instrument, establishing credibility and reliability and attracting more investment for the start-up and broader ecosystem. In fact, in Estonia, this phenomenon is commonly referred to as the “Skype effect”. When Skype was sold, it engendered other successful waves of entrepreneurship and the creation of unicorns via inspiration and re-investment. Former Skype employees founded Bolt,

Wise (former TransferWise) and Pipedrive, which, along with others, have significantly boosted employment (Tumanyan 2021).

Moreover, Dvouletý (2017) found that high-growth ventures in the Czech Republic led to a fall in unemployment rates and regional GDP per capita improvements, as opposed to self-employed set-ups that only had marginal results in employment and did not lead to changes in GDP per capita. In the Netherlands, “Gazelles”, another term for high-growth companies (not according to valuations), have positively affected industries. They recognise opportunities and can precipitate structural economic changes, following Schumpeter’s theory of creative destruction. There are indicators that employment rose, perhaps due to their competitive effects on other suppliers and the industry or through contagion to other enterprises adapting to shifts in consumer demand (Bos & Stam 2011).

Given the relevance of scale-ups in an economy, it is worth exploring the reasons why they move abroad, which could be attributed to a combination of push and pull factors. The local market is small, but tech and innovation clusters, such as Silicon Valley, offer superior networking and market opportunities and facilitated access to capital. These hubs are distinguished for their thriving investment environment and entrepreneurial culture (Bock and Hackober 2020, 956; IDC et al. 2021; Testa et al. 2022).

The large majority of Portuguese unicorns have their HQs elsewhere but maintain strong ties with their country of origin. They have offices, subsidiaries, R&D labs, and tech hubs that create jobs with attractive salaries, involve themselves in Education and Research, and the founders provide mentoring and support the ecosystem through funding. For instance, Farfetch launched an innovation and R&D centre called “Fuse Valley” in Matosinhos and “Dream Assembly”, an accelerator programme. Its founder, José Neves, created the José Neves Foundation to build a knowledge society to promote human potential and universal lifelong education, mainly digital. Outsystems introduced a “Low-Code Development School” with

many courses that have extended regionally and internationally, such as requalification ones for STEM graduates. Talkdesk's founders support digital education in underdeveloped regions and invest in early-stage ventures (Pimentel 2021, 154-7; Testa et al. 2022). In light of the available literature, I formulated the following hypotheses regarding Portuguese unicorns:

H1: The majority of unicorn companies did not receive substantial public assistance and instead relied on private international rounds of investment, whilst recent unicorns may have benefited from newly implemented policies.

H2: Unicorns may have fostered local economic development through job creation, income tax contributions and increased consumption.

H3: Unicorns display social responsibility and may participate in philanthropic activities by donating to projects and institutions.

4.3 Conceptualisation & Methodology

Since the expansion of unicorns is recent, their impact has yet to be measured clearly. Quantifying unicorns' impact and establishing causality on national GDP is challenging, which is exacerbated by having HQs abroad and multiple entities. However, I gathered information on the number of people employed by the companies in PT, whereby their tax contributions and consumption activity would be most significant. Furthermore, I opted for a qualitative evaluation to uncover unicorns' local economic impact and whether their success was attributable to state support. To this end, I interviewed public sector officials at local, national and European levels, unicorn managers, as well as experts in the field. The discussions with these relevant specialists from diverse backgrounds enabled a holistic analysis of the ecosystem, detecting its challenges and aligning expectations (Inter 1). The interviews were semi-structured since specific questions were pre-determined, but others were impromptu (Burgess 1984, 112-132). All individuals granted prior consent to participate and be recorded for the purpose of this study. The questions posed differed according to the participants'

expertise³. Finding willing interlocutors was an arduous task that required months of extensive research and outreach, mainly due to the period of the year and the topic addressed. I would like to express my sincere appreciation for the exceptional availability and kindness of the individuals who, despite their very busy schedules, collaborated with me on this project.

Table 4.1: Characteristics of Participants.

Interviewee no.	Gender	Position	Sector
Inter 1	Female	Journalist	Entrepreneurship
Inter 2	Male	Public Official	European Policy
Inter 3	Male	Public Official	Portuguese Policy, NGO
Inter 4	Female	Unicorn Manager	Human Resources
Inter 5	Male	Unicorn Manager	Fintech
Inter 6	Male	Public Official	Local Municipality

4.4 Findings & Interpretation

In general, information was not widely available. Oftentimes, the interviewees struggled to give concrete answers, and conversations naturally progressed to identifying issues to tackle in PT. There was an acknowledgement of the value of innovation to address shared challenges, and the respective roles high-growth enterprises and the public sector have in achieving these solutions.

First, there was an initial general perception that unicorns had not received public assistance in all interviews. The managers revealed that Remote was only privately funded and that reputation helps in fundraising series, setting aside the need to search for public support (Inter 4, 5). However, an internet search on each unicorn’s website verifies that public support has been significant. Sword Health, which reached a \$1 bn valuation in 2021, has been supported by public projects. These include partnerships and assistance from the state institutions and the EU. There has been available funding from Portugal2020 (a financing

³ Full transcripts and interview questions available upon request.

project supported by the European Regional Development Fund – ERDF), Norte2020, the ERDF, the Recovery and Resilience Plan and NextGenEU. Altogether, since 2017, there have been seven programmes that amount to approximately 8.5 million euros to reinforce R&D, innovation and technological development, SME’s competitiveness, the employment of exceptionally skilled personnel and the creation of a centre for responsible A.I. (Sword Health Digital MSK n.d.). Outsystems has received financial help totalling almost 7.5 million euros from Lisboa2020, Compete2020, Portugal2020 and the ERDF to invest in innovation, research, tech and app development and increase SME’s competitiveness (Outsystems n.d.). Talkdesk was supported with around 500 000€ by Lisboa2020, Portugal2020, and the ERDF to further innovation in client service and improve contact centre experiences (Talkdesk n.d.b). Feedzai has also been co-financed by Centro2020, Compete2020, Portugal2020, and the ERDF, with funds reaching approximately 9.5 million euros to support internationalization, advance AI and team performance, as well as product and platform development (Feedzai n.d.).

The other three unicorns – Farfetch, Remote and Anchorage Digital – did not have available information regarding public support, which may signify that they have not disclosed it or they have not, in fact, received state aid. Farfetch was the first of its own, and in the interview conducted with the VP of special operations at Remote, it was clear that it had not been the case. These findings, which suggest that founding dates are not linked with access to public funding, do not entirely align with the first hypothesis, whereby it was expected that only the latest unicorns would have been more likely to benefit from it. The divergence between interviewees’ answers and reality is interesting because it either demonstrates that information is not widely available, that they do not consider this support relevant, or that public opinion may be biased to think that the state is lagging behind the economy. Likewise, it is essential to view these values critically compared to the multi-million-dollar private investment rounds

with investment giants. Hence, the “extent to which” their evolution could be attributable to the launched public policies is debatable.

Second, since unicorns’ HQs are not in PT, they do not have to pay the corresponding rates of Corporate Income Tax (IRC) that are larger in volume and would directly affect local economic development. Instead, they pay taxes for having an entity in the country. Nonetheless, data on Value Added Tax (VAT) is also not synthesised, so it is de facto impossible to know how much these sums are (Silva 2023⁴). Even when considering this, the IRC is only paid when there is a profit – only the margin between costs and income is taxed. Now, these types of companies prioritise high growth rates over profits, having high costs due to their re-investment into the company. Thus, the main channel for economic impact would be the Personal Income Tax (IRS) or the job creation’s influence on consumption. As articulated by Inter. 3: *“Many of them do not generate profits, so they would not be paying taxes yet except for labour taxes, but that effect is not yet visible (...) It is very positive on employment, as they establish significant hubs for technology development and qualified employment.”*

Portuguese start-ups account for approximately 1% of GDP and employ 8.8 individuals on average (Alves et al. 2022; Pereira 2021). However, the corresponding data about the local impact of unicorn GDP contribution and employment is not consolidated online. I contacted the offices and employees of all seven companies, Pordata and Banco de Portugal. Unfortunately, Pordata did not have equivalent statistics, and I received no response from Banco de Portugal or the businesses, except for Remote. For that reason, I retrieved data from LinkedIn (September 2023). The large majority of employees are in PT in the first four companies of this list, further substantiating the appropriateness of referring to them as Portuguese.

⁴ Personal communication with Head of Data and Standards at Start-Up Portugal.

1. Farfetch had 5726 employees, and 3474 were located in PT.
2. Outsystems had 2077 employees, and 1010 were located in PT.
3. Talkdesk had 1466 employees, and 803 live in PT.
4. Feedzai had 594 employees, and 344 live in PT.
5. Remote had 3713 employees, but no available data on how many live in PT. In informal communications with a manager, they mentioned that since they are an intermediary HR company, there are “more than 1000 collaborators for the Portuguese entity”. However, they but did not want to disclose the entity’s number of workers.
6. Sword Health had 719 workers, with the majority (399) in the US, followed by 287 in PT.
7. Anchorage Digital had 336 employees, with most (232) in the US, followed by 75 in PT.

Recognising that foreign unicorns may also have a local impact is essential. For instance, Teya, a British unicorn, has a Portuguese entity and its Tech hub is in Porto⁵. It has 915 employees on LinkedIn, the majority (358) in the UK, followed by 210 in PT. Although it is not yet possible to quantify the income tax contributions or “trickle-down effects”, unicorns with PT DNA promote quality employment with competitive salaries, corroborating the second hypothesis.

Third, unicorns also participate in foundations, donations and projects. OutSystems is an official donor and partner of Nova School of Business and Economics (SBE) and the only unicorn to do so (Nova SBE 2023⁶). It has also collaborated with CDI Portugal in educational projects (“Apps for Good”) and launched Covid-19 Community Response Projects where it offered expertise and free access to its enterprise software, which led to the implementation of

⁵The concentration of tech hubs and education institutions in the north of PT is further discussed in the second and third chapters.

⁶ Personal communications with Nova SBE’s Head of Fundraising and Corporate Relations and the Haddad Entrepreneurship’s Programme Manager.

projects in the country such as “AroundMe” “Todos Por Um”, “TokMenu”, “vent2life”, “MAIS PRÓXIMO”, “Psicovida”, “Plataforma de Gestão Integrada” and “Portugal #EntraEmCena (Djurisic, 2020; Outsystems n.d.b.). Moreover, co-financed by Portugal2020, Farfetch introduced a project of 2.3 million euros in collaboration with Instituto Superior Técnico, Universidade Nova de Lisboa and Carnegie Mellon Portugal to develop an advanced multimodal chatbot – “Chat R&D” (Farfetch 2020). Again, this is not restricted to “PT DNA” unicorns. Teya and the José Neves Foundation are benefactors and partners of Project 42 Lisboa, a programming school (42 Lisboa n.d.). However, interviewees emphasised that these are endeavours of philanthropic individuals – the founders, Eduardo Pontes and José Neves – not businesses, suggesting a departure from the expectations set by the third hypothesis (Inter 3, 5). In the words of Inter. 3, *“The foundation is the result of a successful entrepreneurial project by José Neves, and it is his personal initiative, not Farfetch's. More than the impact of a Unicorn, it is the impact of a founder who decides to undertake a project.”*

Lastly, many of these unicorns integrate a social impact element core to their mission (Inter 4,5). Therefore, their participation in the economy is also of intrinsic value. Initiatives to promote public health (Sword Health), human fulfilment through remote work (Remote), or the growth and efficiency of SMEs due to improved management (Teya); facilitate digital transitions (Outsystems) and fight financial crime (Feedzai), reflect the Sustainable Development Goals’ Agenda. Further, some actively embed sustainability principles within their operational frameworks, such as Talkdesk’s commitment to sustainability and Farfetch’s aims to reduce its carbon footprint and advance circular fashion (Talkdesk n.d.; Farfetch n.d.).

Given their substantial resources, these enterprises could be key partners of the state, as was exemplified by OutSystems during the pandemic. According to the representative from the local municipality, entrepreneurs are effective problem-solvers, and innovation is a means to generate knowledge and ensure long-term wealth creation to solve social issues (Inter 6).

Teya's manager maintained that working with governments is not zero but a positive-sum endeavour where goals are often aligned (Inter 5). Remote's manager explained that the entities spread out worldwide can engender regional development, which is an objective of the government. By working as an intermediary, they can hire non-citizens (e.g., digital nomads) or nationals to work for foreign companies whilst having a PT labour contract, receiving salaries and paying labour taxes in PT (Inter 4). These comments should be interpreted analytically, as it has been suggested that remote work can adversely affect PT businesses (Amaro 2021). One of the interviewees mentioned that "a remote worker is an immigrant who has not physically left the country", still being a form of brain drain (Inter 3). Although the individuals receive great, competitive salaries and can contribute to the consumer economy ("buying houses, cars, dining out"), their talent is being used elsewhere, and they are not furthering the country's technological development (Inter 3). Other pathways are less measurable but include attracting investors, as well as motivating and inspiring entrepreneurs to create large-scale companies. For instance, the fact that Feedzai is the only "fully Portuguese unicorn" and insists on being so establishes credibility in the global investor market and signals to other start-ups that it is possible to remain in PT. All the others also signal that national talent can achieve remarkable accomplishments (Amaro 2021; Inter 3).

4.5 Discussion

"Reality is way ahead of regulation in many ways" (Inter 4)

Many of the dynamics have yet to be observed. The understanding that there are seven PT unicorns is highly ambiguous, and the definition can be appropriated for different purposes. Across all interviews, many of the same subjects concerning the relocation of HQs resurfaced, as it is the main constraint on direct local economic development. Managers mentioned that having home offices in the US/UK is indispensable for marketing and fundraising (Inter 2, 4). There is a conservative, risk-averse investment culture in PT which can be partially explained

by widespread financial illiteracy (Inter 1; Pimentel 2021, 50; Mónica 2023). Indeed, 86% of total investments originate from foreign sources (Start-Up Portugal 2022, 11).

Nevertheless, there is a mismatch between the current political and legislative landscape and the speed at which these companies evolve (Inter 1). The extensive regulation, bureaucracy, lack of digitalisation, and weak judicial and burdening fiscal systems were repeatedly mentioned across all interviews as indirect barriers that require urgent changes. Easing the heavy regulation, bureaucracy, and the digitalisation of administrative procedures would improve speed and efficiency whilst increasing awareness and ease of public funding and application procedures. A functioning, credible, robust judicial system and legal framework is necessary for dispute settlement. Contracts are frequently ambiguous in these investment rounds, and there is a high probability of disagreement due to inflated expectations and disappointing losses. Investors prefer to invest in countries where they know the judicial system and trust it will protect them (Pimentel 2021, 56). Lastly, an attractive fiscal system characterised by low corporate taxes and less progressive income taxation boosts economic activity and growth by promoting productive and successful entrepreneurship and attract funding, while simultaneously raising government revenue, allowing the state to reap the advantages of its investments in start-ups and innovation (Block 2021; Mertens and Ravn 2013; Venâncio et al. 2022). Similarly, monetary assistance programmes' potential impact is hindered if these broader issues are not resolved (Inter 3). Interviewees also remarked that these policies can serve multiple purposes, such as in talent retention, by providing interesting career prospects and competitive salaries whilst ensuring returns on state investment in education.

The mentioned deterrents to business development elucidate crucial implications regarding the *Entrepreneurial State*. Interviewees had a consistent reservation towards the sole focus on financial assistance across industries. Many defended indirect incentives would ensure an equitable playing field and be a more appropriate policy action. Disruptive innovation can

be achieved through policy diversification, systemic changes and a less-obstructed environment. The fostering of new markets, increasing competitiveness and positive discrimination for tech companies are neutral policy actions that extend support to the sector as a whole. The local municipality's representative mentioned that it has limited power regarding systemic incentives to retain companies "and cities are hostage to national policy". Still, they reiterated the relevance of efficient public policies to maintain Lisbon's competitive advantage and encourage entrepreneurship, such as working with the private sector and VCs, focusing on strategic industries, attracting and mobilising its stakeholders, setting up new infrastructure, hubs or workshops for knowledge-sharing and interdisciplinary collaboration. Exporting to international markets is a natural progression, but unicorn HQs can still be based in the country (Inter 2, 3, 6).

Furthermore, apart from identifying the issues that result in sunk costs due to relocation and deter investor and entrepreneurial confidence, most interviewees added that the mission should shift from start-ups' early funding to "scale-ups". Mid-market or large-scale firms attract talent and are critical for sustained job creation and economic impact (Inter 4, 6). There is an academic debate between those who advocate resources should target high-growth enterprises (e.g., Shane 2009; Kabbara and Hagen 2023), and those who defend the success of start-ups is unclear and selection may miss unique opportunities (e.g., Aldrich and Ruef 2017). Innovative high-growth companies are the most productive, with higher economic outputs⁷. However, although start-ups have high failure rates, they can reach these thresholds and still originate in atypical and unexpected circumstances (e.g., as university projects). These findings reconcile both arguments. Balancing indirect incentives and cross-sector collaboration for high-growth entrepreneurship for a level-playing field can retain scale-ups without discrediting new ventures' ability to develop. Even so, one should be wary of an excessive emphasis on

⁷ Chapter two tests the correlation between the share of high-growth firms and employment growth.

outlier events like unicorns and question their sustainability (Kuckertz et al., 2023; Spigel et al., 2020).

The second fundamental limitation of unicorns' impact on the local economy is inherent to their business model. My second finding shows that even if unicorns were located in Portugal, their contributions through corporate taxation (IRC) would be uncertain. Their valuation is not calculated through profitability or financial sustainability but through subjective and approximate estimations of the "potential for" a sufficiently large return that will compensate for investments. It is based on growth rates, approximations of future multiples, comparative metrics of other start-ups, and market assumptions as risky and ambiguous proxies. Unicorns' IPOs have evidenced their overvaluation, showing significant mismatches between stock prices and private investment (Pimentel 2021: 30, 38-56, 76). Gornall and Strebulaev (2019, p. 41) show that average overvaluation is almost 50% but can reach as much as 145%.

There is another discrepancy regarding disbursed financial resources, business models, and economic indicators. Inorganic and aggressive growth strategies have been preferred by investors, de-prioritising profits. Unicorns maintain high cash-burn rates (perhaps for re-investment, operating and growth expenses) and hold negligible or intangible assets (Bock and Hackober 2020, 976-8; Littman in Pimentel 2021, 113). The expectations of future profitability have led to market distortions since competitiveness is determined by extreme growth cycles (Testa et al. 2022, p.7, 42). Sustaining operations at significant profit losses through VC funds causes large disruptions but ultimately erodes economic value. Hence, valuations focus on growth and do not directly correlate to societal value creation (Kenney and Zysman in Testa et al. 2022, p.43; Kuckertz et al. 2023). Per the account of Inter. 6: *"The term "unicorn" is a marketing concept; we cannot see it as an academic or theoretical one. The definition of a unicorn is to be worth more than \$1 billion in market valuation. But that is also worth very*

little because valuations change, evolve, fall, rise... they are constantly updated, new rounds are made frequently, and so it is a very fragile concept.”

There has been a rapidly emerging tech and unicorn speculative bubble. According to Eckert (2022), between 2005-2010, only 14 businesses received the unicorn label, whilst from 2016-2021, the number was close to 870. Until recently, there was a relatively positive investment environment. Nevertheless, the current crisis (post-COVID, Russo-Ukraine war, inflation, rising interest rates) has hindered the capital-raising process, likely slowing this trend and revealing the sector’s weaknesses, potentially leading to a burst (Inter 3; Pimentel 2021, 109). The associated collapse of Silicon Valley Bank in early 2023, the largest one since 2008, further strained the venture capital and tech industry (Sorkin et al., 2023).

Apart from the lack of data from national statistics offices, this research confirms that little information is available from the companies themselves (Kerai 2017). Farfetch is the only company among these unicorns that is publicly listed. Because they are not traded on stock markets, they are not subject to the same level of scrutiny, allowing them to avoid disclosing essential information about their financial accounts and operations (Inter 1; Pimentel 2021, 38-56, 77). In fact, they may avoid IPOs to defer the disclosure of negative information and maintain reliance on access to private financing, further legitimised by the “unicorn” label and the associated media and press coverage. Therefore, most conduct their operations in confidentiality since releasing this information is not compulsory (Kerai 2017; Zörgiebel 2016).

In sum, this illustrates how unicorn valuation is a financial phenomenon deeply linked to psychological, socio-cultural, and political narratives. It is not established on objective mathematical calculations but on credibility and herd effects. Indeed, following Haiven (2014), the financial sector has increased its influence over politics, culture and economics, and its exchanges account for a large share of international economic activity. However, it is based on

“immaterial and speculative”, imaginary and “trendy” social beliefs. These abstract assets do not represent tangible wealth or are aligned with the “real” economy, leading one to question whether the paradigm should shift from valuation to “value creation” (Haiven 2014; Kuckertz et al. 2023).

4.6 Conclusion

The definition of a “Portuguese unicorn” lacks precision, as it is frequently determined based on factors such as the founder’s nationality, the funds received, and the numbers of workers in the country, even though their headquarters are almost always located abroad. This chapter has assessed the extent to which the evolution of unicorns has resulted from the launched public policies and if unicorns have been beneficial for the local economy and business ecosystem. Through qualitative analysis, this research found that unicorns 1) somewhat unexpectedly have received state funds yet are perhaps negligible when compared to multi-million dollar investment rounds; 2) have a large portion of their workforce in Portugal, contributing to the creation of qualified employment and potential (not yet visible) public contributions through income taxation; 3) engage in philanthropic activities such as foundations, donations and projects as well as 4) attract investors and motivate entrepreneurs. They also often incorporate sustainable development goals onto their business model and can be essential partners of the state. The unavailability of data and information would be the main limitation of this study and an area for further research. At the outset, a quantitative analysis had been planned yet there were no figures on national or regional economic effect on GDP growth, employment, or tax inputs. Silence or lack of knowledge also reveal answers, but a thorough investigation of the beneficiaries of public policies and an impact evaluation is required to determine whether the measures put in place can be justified, and properly assess the constraints the ecosystem faces. Due to this, the main findings of interviews concern national deterrents to business development.

The key question is that the government may invest resources in companies that ultimately relocate, resulting in a financial loss. Thus, urgent changes are necessary to avoid the flight of bright companies and individuals. These include the reduction of bureaucracy, regulation, increase in digitalisation, the strengthening of the judicial and legal framework and an appealing tax regime. In Portugal, the focus should be progressively placed on scale-ups to avoid the relocation of start-ups that reach a certain threshold and choose to move abroad. However, unicorn valuations cannot be a goal, as prioritising rapid growth over profit-making is not financially sustainable. Establishing a favourable business environment has many advantages, but implementation of the recommended policies is challenging, as it is a complex and divisive political matter that extends across all sectors in PT. Nevertheless, there should be a balanced, diversified and holistic range of policies, as there is no magical silver bullet that can bring about immediate change (Inter 2, 3).

5. CONCLUSION

This Policy Analysis Project has addressed critical issues within the Portuguese entrepreneurial ecosystem, aiming to identify the opportunities and challenges for start-ups. Our research revealed that information unavailability can hinder comprehensive policy-making. The broader economic environment determines start-up success, making optimizing public support for business growth essential. Effective policy solutions require a proper problem diagnosis with quality data, given the challenge of adapting policies to unique contexts (Oliveira 2023; Prohorovs 2020, 1; Spigel et al. 2020; Susilo 2020). Therefore, government statistical bodies and private companies should allocate more resources to share information.

Chapter Two concluded that the government must prioritize enhancing system connectivity to foster economic development. Monitoring the number of dealmaker networks can identify areas requiring increased collaboration among small and medium-sized enterprises (SMEs). To achieve this, a shared definition within the EU framework and regularly updated data are essential to ensure policies align with business needs. Streamlining application processes and ensuring timely funding disbursement are vital for fostering a thriving entrepreneurial environment. Additionally, the government should focus on adequately supporting promising businesses (high-growth firms) rather than every new start-up in the ecosystem, tailoring the policies to various economic sectors. Lastly, diversity and gender should not be neglected while formulating such policies.

The third chapter's findings underscored the necessity for customized strategies for various sectors in Portugal, with a clear emphasis on encouraging start-ups to prioritize value creation, sustainability and growth. Achieving these objectives necessitates an improvement of networking opportunities through mentoring and collaborative platforms, as well as fostering strong connections between universities and start-ups to facilitate knowledge transfer. Prioritizing transparent communication channels, streamlining bureaucratic processes and

promoting internationalization are crucial. The most pivotal finding is the importance of robust data collection procedures for effectively evaluating government incentives and comparability, at least at the European scale.

The fourth chapter evaluated the extent to which the development of unicorns can be assigned to public policies and their role in the local economy. First, it found that public funds have played a role in their growth. Second, channels through which unicorns make an impact include their role in qualified job creation and participation in projects, foundations or donations. However, the chapter revealed the main constraints for a more significant economic impact, notably those that have led to the relocation of unicorn headquarters. Diversifying policies and implementing systemic changes such as reducing bureaucracy, improving regulations, enhancing digitalization, strengthening the judicial system and establishing an attractive fiscal system are essential. Lastly, although an emphasis should be placed on high-growth firms (“scale-ups”), the search for unicorn valuations is not sustainable and has significant economic consequences.

Chapter Five delved into three primary areas – the types of R&D investments, challenges associated with collaborations between academia and private industry, and VC funding programs landscape. A spectrum of expert perspectives explained valuable insights into R&D, enablers of success, problems, and solutions for R&D growth in Portugal. The study's conclusions emphasized the distinction between SMEs and startups, advocating for tailored policies. Furthermore, the study pinpointed pivotal factors contributing to the success of R&D initiatives: an entrepreneurial mindset, collaborative endeavours, business-oriented teams, minimal schisms between academia and the private sector, proximity to target markets, and investor confidence.

In summary, this Policy Analysis Project provides a holistic assessment of the Portuguese entrepreneurial ecosystem and presents a series of policy recommendations to

address the identified challenges. Implementing these recommendations and fostering a supportive start-up environment can significantly enhance the Portuguese entrepreneurial ecosystem, resulting in innovation and economic development.

6. BIBLIOGRAPHY

- 42 Lisboa. "The Benefactors." Accessed [September 2023]. <https://www.42lisboa.com/en/benefactors/>
- Abdellatif, Mahmoud M., and Tran-Nam, Binh. 2022. "Tax Versus Non-Tax Incentives to Stimulate Innovation and Entrepreneurship: An International Perspective." In *Government Incentives for Innovation and Entrepreneurship*. ResearchGate. doi:10.1007/978-3-031-10119-9_2.
- Aldrich, Howard E., and Ruef, Martin. 2017. "Unicorns, Gazelles, and Other Distractions on the Way to Understanding Real Entrepreneurship in America." *Academy of Management Perspectives* 32: 458-472. doi:10.5465/amp.2017.0123.
- Alves, Nuno, and Martins, Carlos. 2012. "Mobility and Income Inequality in the European Union and in Portugal." *Economic Bulletin*, 57-70.
- Alves, Diogo, Paramés, Lourenço and Rebelo Tiago 2022. "The Portuguese Environment for Start-ups." *Nova SBE Role to Play*. Accessed [insert date]. <https://roletoplay.novasbe.pt/content/the-portuguese-environment-for-start-ups>
- AMA. 2023. "Agência para a Competitividade e Inovação." <https://eportugal.gov.pt/en-GB/entidades/agencia-para-a-competitividade-e-inovacao>.
- Avnimelech, Gil and Teubal, Morris, Evolutionary Venture Capital Policies: Insights from a Product Life Cycle Analysis of Israel's Venture Capital Industry (October 1, 2003). <http://dx.doi.org/10.2139/ssrn.2758173>
- Avnimelech, Gil and Teubal, Morris, and 2004. "Venture capital start-up co-evolution and the emergence and development of Israel's new high tech cluster." *Economics of Innovation and New Technology* 13: 33-60. doi: 10.1080/1043859042000156020.
- Avimelech, Gil, and Teubal, Morris. 2006. "The emergence of Israel's venture capital industry: How policy can influence high-tech cluster dynamics." In *Cluster Genesis*, 172-192. doi:10.1093/acprof:oso/9780199207183.003.0009.
- Baldacchino, Leonie, Vincent Cassar, and Albert Caruana. "Start-Up Success in a Small Island State: A Study among Entrepreneurs in Malta." *Island Studies Journal*, vol. 3, no. 1, 2008, pp. 73-96. ProQuest, <http://proxy.library.nyu.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fstart-up-success-small-island-state-study-among%2Fdocview%2F1953354201%2Fse-2%3Faccountid%3D12768>.
- Bates, Timothy. 1995. "A comparison of franchise and independent small business survival rates." *Small Business Economics* volume 7, pages 377-388. <https://link.springer.com/article/10.1007/BF01302738>
- Bell-Masterson, Jordan, and Stangler, Dane. 2015. "Measuring an Entrepreneurial Ecosystem." *SSRN Electronic Journal*. March 2015. <http://dx.doi.org/10.2139/ssrn.2580336>.

- Berger, Marius, and Hottenrott, Hanna. 2021. "Start-up subsidies and the sources of venture capital." *Journal of Business Venturing Insights*. <https://doi.org/10.1016/j.jbvi.2021.e00272>.
- Berre, Max. 2022. "What do we know about start-up-valuation drivers? A systematic literature review." *Venture Capital*. DOI: 10.1080/13691066.2022.2086502.
- Bitalk – Negócios à Portuguesa. 2021. "#69 PT1: UNIPLACES, levantar 5M, Unicórnios Portugueses c/ Miguel Santo Amaro [Videos]." Youtube. https://www.youtube.com/watch?v=tk3yMcSD_eg PT2: <https://www.youtube.com/watch?v=IOTqeNGlhdk>.
- Bitalk – Negócios à Portuguesa. 2023. "#123: Anchorage o 1º Banco de Crypto e tem AND Português c/ Diogo Mónica [Videos]." https://www.youtube.com/watch?v=cwaMN_W61jw.
- Block, Josh. "Corporate Taxes and Entrepreneurship." *IZA World of Labor* 2021: 257v2. doi: 10.15185/izawol.257.v2.
- Bock, Carolin, and Hackober, Christian. 2020. "Unicorns—what drives multibillion-dollar valuations?" *Business Research* 13: 949–984. <https://doi.org/10.1007/s40685-020-00120-2>.
- Boesenkopf, Florian A. 2018. "Entrepreneurial Ecosystem: How to Improve Your Local Ecosystem with Political Initiatives." In: Carayannis, E., Campbell, D., Efthymiopoulos, M. (eds) *Handbook of Cyber-Development, Cyber-Democracy, and Cyber-Defense*. Springer, Cham. https://doi.org/10.1007/978-3-319-09069-6_38.
- Binowo, Kenedi, and Hidayanto, Achmad, N. 2023. "Discovering Success Factors in the Pioneering Stage of a Digital Start-up." *Organizacija* 56(1): 3-17. <https://doi.org/10.2478/orga-2023-0001>.
- Bos, Jaap W.B., and Stam, Erik. 2011. "Gazelles, Industry Growth and Structural Change." Discussion Paper Series 11-02 *Utrecht School of Economics*; Tjalling C. Koopmans Research Institute. <https://dspace.library.uu.nl/bitstream/handle/1874/218599/11-02.pdf>.
- Brännback, Malin, Kiviluoto, Niklas, Carsrud, Alan, and Östermark, Ralf. 2010. "Much ado about nearly nothing? An exploratory study on the myth of high growth technology start-up entrepreneurship." ResearchGate. https://www.researchgate.net/publication/254555802_MUCH_ADO_ABOUT_NEARLY_NOTHING_AN_EXPLORATORY_STUDY_ON_THE_MYTH_OF_HIGH_GROWTH_TECHNOLOGY_START-UP_ENTREPRENEURSHIP
- Brown, Ross. Mason, Collin. 2017. Looking inside the spiky bits: a critical review and conceptualisation of entrepreneurial ecosystems. *Small Bus Econ* 49, 11–30 <https://doi.org/10.1007/s11187-017-9865-7>
- Bruton, Garry. D., Ahlstrom, David, and Li, Han-Lin. 2010. "Institutional Theory and Entrepreneurship: Where Are We Now and Where Do We Need to Move in the Future?"

Entrepreneurship Theory and Practice 34(3): 421–440. <https://doi.org/10.1111/j.1540-6520.2010.00390.x>.

Burgess, Robert G. 1984. *In the Field: An Introduction to Field Research*. [A Pesquisa de Terreno: Uma Introdução] Translated by Eduardo de Freitas and Maria Inês Mansinho. 1st edn. Celta Editora.

Cantner, Uwe., Cunningham, James, A., Lehmann, Erik, E. & Menter, Matthias (2021). Entrepreneurial ecosystems: a dynamic lifecycle model. *Small Bus Econ* 57, 407–423. <https://doi.org/10.1007/s11187-020-00316-0>.

Caragliu, Anrea, Coletti, Michele, Landoni, Paolo, and Sala, Alessandro. 2022. "Why and How Innovation Vouchers Work: Disentangling the Roles of Serendipity and Funding." *Journal of Urban Technology* 29(3): 159–182. <https://doi.org/10.1080/10630732.2022.2035886>.

Carrillo, Luis., Bergamini, Tiziana, & López-Cózar-Navarro, Cristina 2014. "El Emprendimiento Como Motor Del Crecimiento Económico." *Boletín económico de ICE, Información Comercial Española* 3048: 55-63. https://www.researchgate.net/publication/325049373_EL_EMPRENDIMIENTO_COMO_MOTOR_DEL_CRECIMIENTO_ECONOMICO

Chen, Peng, Yan, Zhenjun, and Wang, Penfei. 2023. "How can the digital economy boost the performance of entrepreneurs? A large sample of evidence from China's business incubators." *Sustainability* 15(7): 5789. <https://doi.org/10.3390/su15075789>.

Cooper, Arnold C., Gimeno-Gascon, Javier F., and Woo, Carolyn Y. 1994. "Initial human and financial capital as predictors of new venture performance." *Journal of Business Venturing*. Volume 9, Issue 5, 371-395. [https://doi.org/10.1016/0883-9026\(94\)90013-2](https://doi.org/10.1016/0883-9026(94)90013-2).

Crunchbase - Anchorage Digital. Accessed [Sept. 2023]. <https://www.crunchbase.com/organization/anchorage>

Crunchbase - Farfetch. Accessed [Sept. 2023]. <https://www.crunchbase.com/organization/farfetch>

Crunchbase - Feedzai. Accessed [Sept. 2023]. <https://www.crunchbase.com/organization/feedzai>

Crunchbase - Outsystems. Accessed [Sept. 2023]. <https://www.crunchbase.com/organization/outsystems>

Crunchbase - Sword Health. Accessed [Sept. 2023]. <https://www.crunchbase.com/organization/sword-health>

Crunchbase - Talkdesk. Accessed [Sept.2023]. <https://www.crunchbase.com/organization/talkdesk>

Denes, Matthew, Wang, Xinxin, & Xu, Ting. 2019. "Financing Entrepreneurship: Tax Incentives for Early-Stage Investors." *Public Economics: Taxation*. <https://jhfinance.web.unc.edu/wp->

content/uploads/sites/12369/2019/12/2020_Denes_Wang_Xu__Financing_Entrepreneurship_Tax_Incentives_for_Early_Stage_Investors.pdf

- Díaz-Santamaría, Carlos, & Bulchand-Gidumal, Jacques. 2012. "Econometric Estimation of the Factors that Influence Start-up Success." *Sustainability* 13: 2242. <https://doi.org/10.3390/su13042242>.
- Djurisic, Snezana. 2020. "Building the Future Through Apps that Make a Difference." Accessed [September 2023]. <https://www.outsystems.com/blog/posts/apps-that-make-difference/>
- Duong, Cong Doanh, Krzysztof Wach, Ngoc Xuan Vu, Son Tung Ha, and Bich Ngoc Nguyen. 2022. "Entrepreneurial Education, Government Policies and Programmes, and Entrepreneurial Behaviour: A Serial Moderated Mediation Model." *Entrepreneurial Business and Economics Review* 10 (4): 37-54. doi:<https://doi.org/10.15678/EBER.2022.100403>.
- Dunn, Mary B., and Candace Jones. 2010. "Institutional Logics and Institutional Pluralism: The Contestation of Care and Science Logics in Medical Education, 1967--2005." *Administrative Science Quarterly* 55 (1): 114–49. doi:10.2189/asqu.2010.55.1.114.
- Dvouletý, Ondřej. 2017. "Can Policy Makers Count with Positive Impact of Entrepreneurship on Economic Development of the Czech Regions?" *Journal of Entrepreneurship in Emerging Economies* 9: 286-299. 10.1108/JEEE-11-2016-0052.
- Eckert, Vicki H. 2022. "Living in a World of Unicorns." *PricewaterhouseCoopers LLP PwC*, January 17. <https://www.pwc.com/world-of-unicorns>.
- Ehsan, Zaeem-Al. 2021. "Defining a Start-up - A Critical Analysis." *The World Bank; East West University*, <http://dx.doi.org/10.2139/ssrn.3823361>.
- European Commission. n.d. "Recovery Plan for Europe." https://commission.europa.eu/strategy-and-policy/recovery-plan-europe_en.
- European Commission. 2020. "SME Definition – User Guide." European Commission Document Repository. <https://ec.europa.eu/docsroom/documents/42921>.
- European Commission. 2021. "Horizon Europe – Investing to Shape our Future." https://research-and-innovation.ec.europa.eu/document/9224c3b4-f529-4b48-b21b-879c442002a2_en.
- EISMEA. 2023. "IAPMEI - Agencia Para a Competitividade e Inovacao IP." <https://een.ec.europa.eu/local-contact-points/pt/iapmei-agencia-para-competitividade-e-inovacao-ip>.
- Farfetch. "Our 2030 Goals." Accessed [Sept. 2023]. <https://aboutfarfetch.com/sustainability/our-2030-goals/>

- Federal Reserve Bank of St. Louis. 2020. "How Many People Does It Take to Start a Company?" *The Regional Economist*. <https://www.stlouisfed.org/publications/regional-economist/second-quarter-2020/many-people-does-it-take-start-company>.
- Feedzai. "EU Co-Funded Projects." Accessed [Sept 2023]. <https://feedzai.com/eu-co-funded-projects/>
- Flanagan, Kieron, Uyarra, Elvira, and Larangja, Manuel. 2010. "The „policy mix“ for innovation: rethinking innovation policy in a multi-level, multi-actor context." *Manchester Business School Working Paper*, Number 599. <http://www.mbs.ac.uk/research/workingpapers/>.
- Fomin V.P. 2021. "Peculiarities Of Quantitative Assessment Of Business Financial Success Factors." *Conference: Global Challenges and Prospects of The Modern Economic Development*. DOI: 10.15405/epsbs.2021.04.02.211
- Fraiberg, Steve. 2019. "Start-Up Nation: Studying Transnational Entrepreneurial Practices in Israel's Start-Up Ecosystem." *Journal of Business and Technical Communication*, SAGE. DOI: 10.1177/1050651917695541.
- Gandhi, Pahul. "What Criteria a Company Is Considered a Start-up." LinkedIn. Accessed [September 2023]. <https://www.linkedin.com/pulse/what-criteria-company-considered-start-up-pahul-gandhi/>
- Fried, Harold O. and Tauer, Loren W. 2015. "An entrepreneur performance index." *Journal of Productivity Analysis* 44(1). DOI: 10.1007/s11123-015-0436-0.
- Garvin, David A., and Margolis, Joshua D. 2015. "The Art of Giving and Receiving Advice." *Harvard Business Review*, January, 60-71. <https://hbr.org/2015/01/the-art-of-giving-and-receiving-advice>.
- George, Tegan. 2023. "Types of Interviews in Research | Guide & Examples." Scribbr. Retrieved August 9. <https://www.scribbr.com/methodology/interviews-research/>.
- Gobierno de España. "Spain Entrepreneurial Nation." 2021. https://nacionemprededora.gob.es/sites/default/files/Spain_Entrepreneurial_Nation.pdf.
- Gornall, Will, and Strebulaev, Ilya. 2019. "Squaring Venture Capital Valuations with Reality." *Journal of Financial Economics (JFE)*, December 2, 2019, Forthcoming. SSRN: <https://ssrn.com/abstract=2955455> or <http://dx.doi.org/10.2139/ssrn.2955455>.
- Guellec, Dominique., Pottelsberghe de la Potterie, Bruno. 2000. "The Impact of Public R&D Expenditure on Business R&D." *OECD Science, Technology and Industry Working Papers*, No. 2000/04, OECD Publishing, Paris. <https://doi.org/10.1787/670385851815..>
- Guerrero, Maribel., and Urbano, David. 2019. "Effectiveness of Technology Transfer Policies and Legislation in Fostering Entrepreneurial Innovations across Continents: An Overview." *Journal of Technology Transfer* 44: 1347–1366. doi:10.1007/s10961-019-09736-x.

- Ginevičius, Romualdas., Žemaitis, Eigirdas, and Petraškevičius, Vladislavas. 2022. "Evaluation of the Impact of Research and Development on the Socio-Economic Development of EU Countries." *Amfiteatru Economic*, Suppl. Special Issue, 24: 1001-1013. doi: <https://doi.org/10.24818/EA/2022/S16/1001>.
- Haiven, Max. 2014. *Cultures of Financialization: Fictitious Capital in Popular Culture and Everyday Life*. London, United Kingdom: Palgrave Macmillan. <https://doi.org/10.1057/9781137355973>.
- Hani, Eli H. 2021. "What is business success?" SEA – Practical Application of Science. Volume IX. Issue 2027. https://seaopenresearch.eu/Journals/articles/SPAS_27_5.pdf
- Havas, Attila. 2015. "Types of Knowledge and Diversity of Business-Academia Collaborations: Implications for Measurement and Policy." *Triple Helix* 2, no. 1 (2015): 1-26. doi: <https://doi.org/10.1186/s40604-015-0023-4>.
- Hou, Bojun., Hong, Jin., Qiong, Chen, Shi, Xing, and Zhou, Yu. 2019. "Do Academia-Industry R&D Collaborations Necessarily Facilitate Industrial Innovation in China?: The Role of Technology Transfer Institutions." *European Journal of Innovation Management* 22, no. 5 (2019): 717-746. doi: <https://doi.org/10.1108/EJIM-09-2018-0195>.
- IAPMEI. (2022). *Start-up Voucher 2019-2022*. IAPMEI - Agência para a Competitividade e Inovação, I.P. Retrieved (2023), [https://www.iapmei.pt/PRODUTOS-E-SERVICOS/Empreendedorismo-Inovacao/Empreendedorismo-\(1\)/Start-up-Voucher-2019-2022.aspx](https://www.iapmei.pt/PRODUTOS-E-SERVICOS/Empreendedorismo-Inovacao/Empreendedorismo-(1)/Start-up-Voucher-2019-2022.aspx)
- IDC, Start-up Portugal. 2022. *Building a Scaleup Nation (Portuguese Start-up & Entrepreneurial Ecosystem Report 2022)*. https://idcportugal.com/wp-content/uploads/2022/12/Report_Start-ups_LongVersion_02.pdf.
- IDC, Start-up Portugal, and Portugal Digital. 2021. *Portugal, the Best Place to Start-up, Start-up & Entrepreneurial Ecosystem*, Report 2021. https://idcportugal.com/wp-content/uploads/2021/12/Start-up__Entrepreneurial_Ecosystems2.0_v32_small_compressed-1.pdf.
- International Monetary Fund (IMF), European Dept. 2022. "Portugal: Selected Issues." *IMF Staff Country Reports* 2022, no. 204, A002. Accessed September 2023. <https://www.elibrary.imf.org/view/journals/002/2022/204/article-A002-en.xml>.
- International Monetary Fund. 2023. "Portugal Staff Concluding Statement of the 2023 Article IV Mission." *IMF*. <https://www.imf.org/en/News/Articles/2023/05/08/cs050823-portugal-2023-article-iv-mission>.
- Jia, Li. 2023. "Can Fiscal Subsidies and Tax Incentives Stimulate High-quality Innovation in Strategic Emerging Industries?: Explanation Based on Enterprise Life Cycle Theory." *Frontiers in Business Economics and Management*, published by Darcy & Roy Press Co. Ltd. doi:10.54097/fbem.v9i2.8998.

- Johnson, Evan, Hemmatian, Iman, Lanahan, Lauren, and Joshi, Arnol M. 2022. "A Framework and Databases for Measuring Entrepreneurial Ecosystems." *Research Policy* 51, no. 2 (2022): 104398. doi: <https://doi.org/10.1016/j.respol.2021.104398>.
- Kabbara, Diala, and Hagen, Birgit. 2023. "A Life Cycle View on Unicorn Start-ups: Drivers of Long-term High-growth." *Journal of Small Business and Enterprise Development*, ahead-of-print, no. ahead-of-print. Accessed September 2023. <https://doi.org/10.1108/JSBED-02-2023-0077>.
- Klette, T. J., Møen, J., & Griliches, Z. (2000). Do subsidies to commercial R&D reduce market failures? *Microeconomic evaluation studies*. *Research Policy*, 29, 471–495. [https://doi.org/10.1016/s0048-7333\(99\)00086-4](https://doi.org/10.1016/s0048-7333(99)00086-4)
- Kerai, Anita. 2017. "Role of Unicorn Tag in Gaining Legitimacy and Accessing Funds." *The Business and Management Review*, Volume 9, no. 2 (2017): 119-127. https://cberuk.com/cdn/conference_proceedings/conference_49987.pdf.
- Kuckertz, Andreas, Scheu, Maximilian, and Davidsson, Per. 2023. "Chasing Mythical Creatures—A (Not-So-Sympathetic) Critique of Entrepreneurship's Obsession with Unicorn Start-ups." *Journal of Business Venturing Insights* 19, e00365. doi: <https://doi.org/10.1016/j.jbvi.2022.e00365>.
- La Moncloa. 2023. "High Commissioner for Spain Entrepreneurial Nation." <https://www.lamoncloa.gob.es/lang/en/temas/entrepreneurial-nation/Paginas/index.aspx>.
- Laarman, Sjoerd. 2016. "Speed Up or Slow Down: A Case Study into Perceived Bureaucracy in Public-Private Accelerator Programs." Thesis for: Master Business Administration (MBA) ResearchGate. DOI: 10.13140/RG.2.1.4623.1281.
- Leendertse, Jip, Schrijvers, Mirella, and Stam, Erik. 2022. "Measure Twice, Cut Once: Entrepreneurial Ecosystem Metrics." *Research Policy* 51, no. 9 (2022): 104336. doi: <https://doi.org/10.1016/j.respol.2021.104336>.
- Langhorn, K. 2014. "Encouraging Entrepreneurship with Innovation Vouchers: Recent Experience, Lessons, and Research Directions." *Canadian Public Administration* 57, no. 2 (2014): 318–326. doi: <https://doi.org/10.1111/capa.12070>.
- Lavčák, Marek, Hudec, Oto, and Sinčáková, Žofia. 2019. "Local and Institutional Factors of Start-Up Ecosystems: Common and Inherited Attributes." *J Knowl Econ* 10 (2019): 1765–1783. doi: <https://doi.org/10.1007/s13132-019-00598-0>.
- Li, Youjia, Li, Yi., and Qiu, Shunli. 2023. "Analysis on the Effectiveness and Mechanisms of Public Policies to Promote Innovation of High-tech Start-ups in Makerspaces." *Sustainability* 15, no. 9 (2023): 7027. doi: <https://doi.org/10.3390/su15097027>.
- Lind, Frida, Alexander Styhre, and Lise Aaboén. 2013. "Exploring University-Industry Collaboration in Research Centres." *European Journal of Innovation Management* 16 (1): 70-91. doi:<https://doi.org/10.1108/14601061311292869>. <http://proxy.library.nyu.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscho>

larly-journals%2Fexploring-university-industry-collaboration%2Fdocview%2F1268765637%2Fse-2%3Faccountid%3D12768.

- Lisboa - Município de Lisboa. Lisboa- The Economy in Figures 2022. (n.d.). https://www.lisboa.pt/fileadmin/cidade_temas/economia_inovacao/documentos/LisboaN2022_EN.pdf.
- Lisbon Municipality & Dealroom. 2022. The State of Lisbon's Start-up Ecosystem, December 2022. https://dealroom.co/uploaded/2022/12/Lisbon-full-report-dec-2022_v2.pdf?x62961.
- LiveMint. 2019. "When Is a Company Considered a Start-up and What Is Angel Tax?" <https://www.livemint.com/money/personal-finance/when-is-a-company-considered-a-start-up-and-what-is-angel-tax-1553432285097.html>.
- Li, Zhengwei, Jixun Liu, and Jiadong Pan. 2019. "Governmental Governance in the Entrepreneurial Ecosystem: A Perspective of New Venture Growth." doi:10.19571/j.cnki.1000-2995.2019.12.000.
- Lowder, B.Tim 2009. "Choosing a Methodology for Entrepreneurial Research: A Case for Qualitative Research in the Study of Entrepreneurial Success Factors." *Elsevier BV*. doi:10.2139/ssrn.1413015.
- Mason, Colin and Ross Brown. 2013. "Creating Good Public Policy to Support High-Growth Firms." *Small Business Economics* 40 (2) (02): 211-225. doi:<https://doi.org/10.1007/s11187-011-9369-9>.
- Mazziotta, Matteo, and Pareto, Adriano. 2017. "Synthesis of Indicators: The Composite Indicators Approach." *Complexity in Society: From Indicators Construction to their Synthesis*, edited by F. Maggino, Social Indicators Research Series, vol. 70. Springer, Champ https://link.springer.com/referenceworkentry/10.1007/978-3-319-69909-7_104636-1
- Mazzucato, Mariana. 2013. *The Entrepreneurial State: Debunking Public vs Private Sector Myths*. London: *Anthem Press*. [Online] VLebooks E-book Collection.
- Mertens, Karel, and Morten O. Ravn. 2013. "The Dynamic Effects of Personal and Corporate Income Tax Changes in the United States." *The American Economic Review* 103 (4): 1212-1247. doi:10.1257/aer.103.4.1212.
- Müller, S. 2022. "Measuring Your Local Start-up Ecosystem: A Short Guide." January 24, 2022. <https://dealroom.co/blog/measuring-local-startup-ecosystem-short-guide>
- Nasar, Asim, Akram, Muhammad, Safdar, Muhammad., and Akbar, Muhammad. 2022. "A Qualitative Assessment of Entrepreneurship Amidst COVID-19 Pandemic in Pakistan." *Asia Pacific Management Review* 27, no. 3 (September 2022): 182–189. doi:10.1016/j.apmr.2021.08.001.
- Nguyen, Van Bon. 2023. "The Relationship between Public Expenditure and Private Investment in Developed and Developing Economies: Policy Implications Based on the

- Difference." *Hacienda Publica Espanola* (244): 37-55. doi:<https://doi.org/10.7866/HPE-RPE.23.1.2>.
<http://proxy.library.nyu.edu/login?qurl=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Frelationship-between-public-expenditure-private%2Fdocview%2F2790457821%2Fse-2%3Faccountid%3D12768>.
- OECD (2020). *OECD Capital Market Review of Portugal 2020: Mobilising Portuguese Capital Markets for Investment and Growth*, OECD Capital Market Series. <https://www.oecd.org/corporate/OECD-Capital-Market-Review-Portugal.htm>
- OECD (2023). *Objectives and challenges of entrepreneurship policy*. <https://www.oecd-ilibrary.org/sites/fff33142-en/index.html?itemId=/content/component/fff33142-en>
- Outsystems. "EU Co-funded Projects." Accessed [September 2023]. <https://www.outsystems.com/eu-co-funded-projects/>
- OutSystems. "Projects - COVID-19 Community Response." Accessed [September 2023]. <https://www.outsystems.com/community/COVID-19/projects>
- Ozkazanc-Pan, B., & Muntean, S. C. (2021). *Entrepreneurial Ecosystems: A Gender Perspective*. 10.1017/9781009023641
- Page, Anrew, and Holmström, Jonny. 2023. "Enablers and Inhibitors of Digital Start-up Evolution: A Multi-Case Study of Swedish Business Incubators.." *Journal of Innovation and Entrepreneurship*, 12(1), 35. doi:<https://doi.org/10.1186/s13731-023-00306-y>.
- Parmenter, D. 2015. "Key Performance Indicators-Developing, Implementing, and Using Winning KPIs." 3rd Edition, Wiley, Hoboken. at:<https://doi.org/10.1002/9781119019855>.
- People Global Relocation (2022). "What is the start-up law?" <https://www.peopleglobalrelocation.com/what-is-the-start-up-law/>
- Pereira, Beatriz Candeias. "Consequências da Emigração dos 'Unicornios' Portugueses." *Jornal Económico*, Accessed, <https://jornaleconomico.pt/noticias/consequencias-da-emigracao-dos-unicornios-portugueses-732014/>.
- Pimentel, Ana (2021). *Unicórnios Portugueses* (1st edn). Editora Lua de Papel.
- Polluveer, K. (2023). Innovation Policy, Fact Sheets on the European Union - *European Parliament* <https://www.europarl.europa.eu/factsheets/en/sheet/67/innovation-policy>
- Governo da República Portuguesa (2022). Governo aprova enquadramento legal e regulação de benefícios fiscais para start-ups [Press release]. <https://www.portugal.gov.pt/pt/gc23/comunicacao/comunicado?i=governo-aprova-enquadramento-legal-e-regulacao-de-beneficios-fiscais-para-start-ups#:~:text=Esta%20proposta%20de%20lei%20reconhece%20um%20enquadramento%20especial,o%20crescimento%20alicer%3%A7ado%20na%20digitaliza%3%A7%3%A3o%20e%20na%20inova%3%A7%3%A3o>.
- Programa Novos Tempos (2021). *Carlos Moedas Novos Tempos Lisboa*. <https://amensagem.pt/wp-content/uploads/2021/10/Programa-Novos-Tempos.pdf>

- Prohorovs, A. (2020). *Unicorn exits as a trigger for the development of small countries' start-up ecosystems*. Forbes (Latvian edition), (16), 14-19. DOI:10.2139/ssrn.3726135
- Ramaciotti, L., Muscio, A., & Rizzo, U. (2017). *The impact of hard and soft policy measures on new technology-based firms*. *Regional Studies*, 51(4), 629-642. DOI: 10.1080/00343404.2016.1255319
- Ramalho, Rita. "OutSystems e Nova SBE." Email to Carolina Teixeira. September 4, 2023
- Reynolds, P. D., & Dennis, D. (2015). *When is a Firm Born? Alternative Criteria and Consequences*. *Academy of Management Annual Meeting Proceedings*, 2015(1), 11611-11611. DOI: 10.5465/AMBPP.2015.11611
- Ritchie, J., & Spencer, L. (1994). *Qualitative Data Analysis for Applied Policy Research*, The Qualitative Researcher's Companion, <https://doi.org/10.4135/9781412986274>
- Roelandt, T., & van der Wiel, H. (2020, January 30). *The long-term impact of Dutch innovation vouchers: Back to the future with randomised controlled trials*. <https://www.innovationgrowthlab.org/blog/long-term-impact-dutch-innovation-vouchers-back-future-randomised-controlled-trials>.
- Savosh, Kateryna, Nunes, Alcina. 2019. "Impact of GEM's Business Environment Factors On Business Innovation: Panel Data Analysis For 100 Economies." *In 34th International Business Information Management Association Conference "Vision 2025: Education Excellence and Management of Innovations through Sustainable Economic Competitive Advantage*. Madrid: IBIMA. p. 8779-8788.
- Schiller, Bradley R., and Crewson Philip E. 1997. "Entrepreneurial Origins: A Longitudinal Inquiry." *Economic Inquiry*. Vol. 35. Issue 3. 523-31. https://econpapers.repec.org/article/oupecinqu/v_3a35_3ay_3a1997_3ai_3a3_3ap_3a523-31.htm
- Schumacher, Nina. "CAN BUSINESS MODEL COMPONENTS EXPLAIN DIGITAL START-UP SUCCESS? A Qualitative Analysis of the Business Models of Start-Ups from the Perspective of German Venture Investors." *Ekonomiska Misao i Praksa*, vol. 31, no. 1, 2022, pp. 81-98. DOI: 10.17818/EMIP/2022/1.4
- Sevilla-Bernardo, Javier, Blanca Sanchez-Robles, and Teresa Herrador-Alcaide. 2022. "Success Factors of Startups in Research Literature within the Entrepreneurial Ecosystem." *Administrative Sciences* 12 (3): 102. doi:<https://doi.org/10.3390/admsci12030102>. <http://proxy.library.nyu.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fsuccess-factors-startups-research-literature%2Fdocview%2F2716465203%2Fse-2%3Faccountid%3D12768>.
- Shane, S. (2009). *Why encouraging more people to become entrepreneurs is bad public policy*. *Small Bus Econ* 33, 141–149. <https://doi.org/10.1007/s11187-009-9215-5>
- Solomon, G. T., Bryant, A., May, K., & Perry, V. (2013). *Survival of the fittest: Technical assistance, survival and growth of small businesses and implications for public policy*. *Technovation*, 33(8–9), 292–301. <https://doi.org/10.1016/j.technovation.2013.06.002>

- Sorkin, Andrew Ross, Ravi Mattu, Bernhard Warner, Sarah Kessler, Michael J. de la Merced, Lauren Hirsch, and Ephrat Livni. "Silicon Valley Bank Faces Collapse Amid Financial Turmoil." *The New York Times*. Accessed March 11, 2023. <https://www.nytimes.com/2023/03/11/business/dealbook/silicon-valley-bank-collapse.html>.
- Spigel, B., Kitagawa, F., & Mason, C. (2020). *A manifesto for researching entrepreneurial ecosystems*. *Local Economy*, 35(5), 482–495. <https://doi.org/10.1177/0269094220959052>
- Stam, E., & van de Ven, A. (2021). *Entrepreneurial ecosystem elements*. *Small Bus Econ* 56, 809–832. <https://doi.org/10.1007/s11187-019-00270-6>
- Start-up Portugal (2022). *Portugal Start-up Ecosystem Report*. February 2022. <https://start-upportugal.com/wp-content/uploads/2022/03/GG-countryreport-portugal.pdf>
- Start-up Portugal (2023a). *Start-up Voucher*. <https://start-upportugal.com/pt/programs/start-up-voucher-2/>
- Start-up Portugal (2023b). *Start-up Voucher*. <https://start-upportugal.com/pt/programs/empreende-xxi-2/>
- Start-up Portugal (2023c). *Semente*. <https://start-upportugal.com/programs/semente/>
- Start-up Portugal (2023d). *Business Abroad* <https://start-upportugal.com/programs/business-abroad-2/>
- Start-up Portugal (2023e). *Programs*. <https://start-upportugal.com/programs/>
- Start-up Status. (2017). Three models to measure innovation ecosystems. Start-up Status. <https://start-upstatus.co/three-models-to-measure-innovation-ecosystems/>
- Stephens, S., McLaughlin, C., Ryan, L., Catena, M., & Bonner, A. (2022). *Entrepreneurial ecosystems: Multiple domains, dimensions, and relationships*. *Journal Title*, Volume 18, <https://doi.org/10.1016/j.jbvi.2022.e00344>
- Stinchcombe, A.L. (1965). *Social structure and organizations*, in March, J. (Ed.) *Handbook of Organizations*, Rand McNally, Chicago, IL, pp. 142-93.
- Susilo, D. (2020). *Scalable Start-up Entrepreneurship and Local Economic Development in Emerging Economies*. *Applied Economics Journal* Vol. 27 No. 2 (December 2020):145-163.
- Talkdesk. Accessed [September 2023], <http://www.talkdesk.com/>
- Talkdesk. "Talkdesk desenvolve projeto de inovação em customer experience ao abrigo do Portugal. 2020." Accessed [Sept 2023]. <https://www.talkdesk.com/pt/talkdesk-leverages-portugal-2020-european-funding-to-develop-another-customer-experience-innovation/>
- Talkdesk. "SECURITY & COMPLIANCE | SUSTAINABILITY. Environmental Sustainability - Security & Compliance | Talkdesk." Accessed [Sept 2023].

<https://www.talkdesk.com/contact-center-platform/security-compliance/environmental-sustainability/>

- Teare, G. (2023, April 7). Global VC funding falls dramatically across all stages in Rocky Q1, despite massive OpenAI and stripe deals. *Crunchbase News*. <https://news.crunchbase.com/venture/global-vc-funding-falls-q1-2023/>
- Testa, G., Compañó, R., Correia, A., & Rückert, E. (2022). *In search of EU unicorns - What do we know about them?* JRC Technical Report European Commission, 10.2760/843368
- Teten, David & AbdelFattah, Adham & Bremer, Koen & Buslig, Gyorgy. (2013). "The Lower-Risk Start-up: How Venture Capitalists Increase the Odds of Start-up Success" *The Journal of Private Equity*. 16. 7-19. 10.3905/jpe.2013.16.2.007.
- The IT Factory. (n.d.). *What is a start-up?* The IT Factory. <https://www.the-itfactory.com/start-up-knowledgebase/en/article/what-is-a-start-up/#:~:text=Uma%20start-up%20%C3%A9%20uma%20nova%20empresa%20que%20ainda,ter%207%20anos%20e%20ser%20ainda%20uma%20start-up.>
- Tumanyan, V. (n.d.). Role of Unicorn Start-ups in Developing the Country's Start-up Ecosystem. PhD Student of the Chair of Management, Public Administration Academy of the Republic of Armenia. DOI: 10.52174/1829-0280_2021_6_137
- US Department of Commerce. "Portugal - Information and Communications Technology." International Trade Administration . Accessed September 12, 2023. <https://www.trade.gov/country-commercial-guides/portugal-information-and-communications-technology#:~:text=According%20to%20the%20United%20Nations,Readiness%20for%20Frontier%20Technologies%20Index.>
- Van de Ven, Montijn, Machado, Paola L., Athanasopoulou, Alexia, Aysolmaz, Banu, Turetken Oktay. 2022. "Key Performance Indicators for Business Models: A Review of Literature." *Thirtieth European Conference on Information Systems (ECIS 2022)*. Timisoara. https://www.researchgate.net/publication/360109925_Key_Performance_Indicators_for_Business_Models_A_Review_of_Literature
- Van Praag, Mirjam C. 2003. "Business Survival and Success of Young Small Business Owners". *Small Business Economics* 21: 1–17. <https://doi.org/10.1023/A:1024453200297>
- Vanino, Enrico, Roper, Stephen, and Becker, Bettina. 2019. "Knowledge to Money: Assessing the Business Performance Effects of Publicly-funded R&D Grants." *Research Policy* 48(7): 1714-1737. <https://doi.org/10.1016/j.respol.2019.04.001>.
- Vankar, Preeti. "Germany: GDP Spent on R&D 2000-2021." *Statista*, July 28, 2023. <https://www.statista.com/statistics/461711/share-of-gdp-expenditure-on-research-and-development-germany/#:~:text=Germany%3A%20share%20of%20GDP%20expenditure%20on%20research%20and%20development%202000%2D2021&text=In%202021%2C%20aproximately%203.13%20percent,spent%20on%20research%20and%20development.>

- Venâncio, Ana, Victor Barros, and Clara Raposo. 2022. "Corporate Taxes and High-Quality Entrepreneurship." *Small Bus Econ* 58 (2022): 353–382. Accessed [Access Date]. <https://doi.org/10.1007/s11187-020-00413-0>.
- Watson, K., Hogarth-Scott, S., & Wilson, N. (1998). *Small business start-ups: Success factors and support implications*. *International Journal of Entrepreneurial Behaviour & Research*, 4(3), 217–238. <https://doi.org/10.1108/13552559810235510>
- Wijngaarde, Y. (2021). *The economic engine of start-ups: Using data to fuel start-up ecosystems*. Dealroom. <https://dealroom.co/blog/the-economic-engine-of-start-ups-using-data-to-fuel-start-up-ecosystems>
- Wijngaardde, Y. (2021). "What is a start-up?" Dealroom. <https://dealroom.co/blog/what-is-a-start-up>
- Wu, Jingwei, et al. "Critical Success Factors for Biotech Incubators - A Qualitative Study of Successful Incubators in China and the US." *Journal of Asia Entrepreneurship and Sustainability*, vol. 18, no. 2, 2022, pp. 92-124. ProQuest, <http://proxy.library.nyu.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fcritical-success-factors-biotech-incubators%2Fdocview%2F2642950909%2Fse-2%3Faccountid%3D12768>.
- Xu, J., Chee-Pung Ng, Toong, H. S., Vasudevan, A., Tee, P. K., Alex Hou, H. N., & Wong, C. H. (2023). *Fiscal and tax policies, access to external financing and green innovation efficiency: An evaluation of chinese listed firms*. *Sustainability*, 15(15), 11567. doi:<https://doi.org/10.3390/su151511567>
- Yu, F., Guo, Y., Le-Nguyen, K., Barnes, S. J., & Zhang, W. (2016). "The impact of government subsidies and enterprises' R&D investment: A panel data study from renewable energy in China". *Energy Policy*, 89, 106–113. <https://doi.org/10.1016/j.enpol.2015.11.009>
- Yusuf, S. 2008. "Intermediating Knowledge Exchange between Universities and Businesses." *Research Policy* 37 (8) (09): 1167-1174. doi:<https://doi.org/10.1016/j.respol.2008.04.011>. <http://proxy.library.nyu.edu/login?url=https%3A%2F%2Fwww.proquest.com%2Fscholarly-journals%2Fintermediating-knowledge-exchange-between%2Fdocview%2F753827855%2Fse-2%3Faccountid%3D12768>.
- Yusuf, S. (2023). *Can Fast-Growing Unicorns Revive Productivity and Economic Performance?* CGD Notes. Center for Global Development. <https://www.cgdev.org/sites/default/files/can-fast-growing-unicorns-revive-productivity-and-economic-performance.pdf>
- Zoller, Ted Douglas. 2010. *The Dealmaker Milieu: the Anatomy of Social Capital In Entrepreneurial Economies*. Chapel Hill, NC: University of North Carolina at Chapel Hill. <https://doi.org/10.17615/8hvq-0x07>
- Zörgiebel, S. (2016). *The Rise of the Unicorns - How Media Affects Start-Up Valuations*, Goethe University Frankfurt. SSRN <http://dx.doi.org/10.2139/ssrn.2808458>

OECD. THE OECD JOBS STRATEGY TECHNOLOGY, PRODUCTIVITY AND JOB CREATION: BEST POLICY PRACTICES HIGHLIGHTS. (n.d). <https://www.oecd.org/sti/ind/2759012.pdf>

Xu, J., Chee-Pung Ng, Toong, H. S., Vasudevan, A., Tee, P. K., Alex Hou, H. N., & Wong, C. H. (2023). *Fiscal and tax policies, access to external financing and green innovation efficiency: An evaluation of chinese listed firms*. Sustainability, 15(15), 11567. doi:<https://doi.org/10.3390/su151511567>

Zikmund, William G., Barry J. Babin, Jon C. Carr, and Mitch Griffin. 2013. "Business Research Methods" *Cengage Learning*.

5 APPENDIX IV: INTERVIEWS⁸ (CHAPTER IV & V)

Ana Pimentel: Journalist and Podcaster, Author of “Portuguese Unicorns”, Editorial Coordinator of Lua de Papel, Grupo Leya.

António Vicente: Assistant Professor (Adjunct) at Nova School of Business and Economics; Deputy Head of the Representation of the European Commission in Portugal; Former Head of Cabinet to the EU Commissioner for Research, Science and Innovation (2014-2019), Former Chief of Staff of the Secretary of State to the Prime Minister (2011-2014).

Carlos Oliveira: Co-founder and Executive President of Fundação José Neves, former member of the European Innovation Council’s Advisory Board at the European Commission, former Secretary of State for Entrepreneurship, Competitiveness and Innovation (2011-2015), Founder and CEO of MobiComp, a mobile services start-up that was sold to Microsoft in 2008.

David Magboule: Advisor Strategy Consultant Founder at LabToMarket Start-up Portugal. Strategic marketer, Healthcare expert, University of Nottingham BSc Biology graduate, with strong interpersonal skills and fascinated by the business world, started his career in the sales domain.

Filipa Matos: VP of Special Operations and former Director and VP of International Expansion and People Operations at Remote; Co-founder of Future Workforce Alliance; Former Head of People (Iberia) at Bird; Former People Operations Manager and Specialist at Unbabel.

Francisco Delgado: Policy and Partnerships and former Public Policy Representative at Teya (previously SaltPay).

⁸ Full transcripts and interview questions available upon request. Some interviews were conducted in Portuguese and translated to English. Other interviews were not included in this list to maintain anonymity.

Jorge Pimenta: Innovation Director at IPN, Trainer, Teacher and Speaker. Innovation Director at Instituto Pedro Nunes, the technology transfer institution associated with Coimbra University. Coordinates the ESA Space Solutions Centre Portugal.

Luiz Jardim de Oliveira: Member of Cabinet and Advisor to Mayor Carlos Moedas for Economic Affairs & Innovation; International Relations; and Participatory Democracy & Civic Engagement.

Niron Hashai: Dean of Arison School of Business at Reichman University (IDC Herzliya). Full Professor at the Arison School of Business, the Interdisciplinary Center, Herzliya.