LUISS

Degree Program in Corporate Finance

Course of Advanced Corporate Finance

An Empirical Analysis of the Venture Capital and Startup Landscape in the Italian Market

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INTRODUCTION

In the last decades, Venture Capital (VC) has emerged as a fundamental pillar in supporting and accelerating the development of modern economies, in particular fostering innovative and technological enterprises. Venture Capital represents a unique form of long-term financing, characterized by its focus on high risk and high yields investments in companies with a significant growth potential. Differently from traditional financing methods, VC not only provides necessary financial resources, indeed it also offers strategical and managerial support, crucial in the early-stage of a company development.

The main purpose of this thesis is to conduct a deep analysis of the venture capital ecosystem, with particular emphasis on the Italian market for innovative startups and small medium enterprises (SME). The thesis is structured in multiple comprehensive sections, each of them deal with several facets of venture capital, starting from historical origins moving to a detailed analysis of the contemporary Italian market landscape.

Initially, the thesis presents an historical overview of venture capital, tracking its evolution mainly in the United States, where the VC industry first took root and flourished. This section analyses the multiple development stages of VC, highlighting the key milestones and venture capital typologies born during the years. Understanding this historical context is fundamental to appreciate the actual practices and dynamics which define the venture capital industry of today.

After the historical overview, the focus shifts to the organizational structures of venture capital funds. Particular attention is dedicated to the limited partnership model, which became the predominant organizational structure for venture capital investments. The complexity of this model, including the responsibilities and the roles of limited and general partners, the capital commitments and the funds' management mechanisms, are deeply examined to provide a clear understanding of the functioning of venture capital funds.

A critical component of the thesis is the detail examination of the investment process in venture capital funds. This section covers the entire life-cycle of a VC investment, from the initial investment

selection and the terms negotiation to the continuous monitoring and the value-added to portfolio companies. Moreover, the strategies used by venture capitalists to improve the performances and the growth of the investments are deeply explored. Additionally, various venture capital contracts typologies are discussed together with the crucial role of reputation inside VC market, providing insights on the contractual and relational dynamics which underpin successful investment in venture capital.

The thesis then move with the second chapter to an extended analysis of the Italian market for innovative startups and small medium enterprises. This section starts with the formal definitions of innovative startups and SMEs following Italian regulations. It provides a detailed analysis from the geographical and sectoral distribution of these companies, highlighting the regions and sectors in which the innovation is more concentrated. The regulatory framework which governs the startups and SMEs in Italy is examined, with a focus on the legislative measures designed to create a favourable environment for innovation and investments. Policies and key initiatives, such as "Decreto Crescita 2.0" and other fiscal incentives, are analysed to understand their impact on the growth and development of the startup ecosystem.

In addition to the regulatory environment, the thesis examines the various support structures available for startups and SMEs, including certified incubators. These incubators have a vital role on providing infrastructure, resources and necessary guidance for the startup in order to have success. The distribution and performances of these incubators in all of Italy are analysed to understand their contribution to the innovation landscape.

A significant part of this thesis is constituted by an empirical analysis aimed at investigating the impact of venture capital on the economic and financial development of invested companies. This analysis uses a complete dataset of Italian startups to identify the main quantitative and qualitative features that attract venture capital investments. Using robust statistical models, the thesis try to find out which are the factors that drive successful venture capital investments and their consequent impact on companies' performances.

1. VENTURE CAPITAL (VC)

Venture capital activity can be defined as the investment activity with the capital of risk in companies that have the potential to develop into significant economic contributors (NVCA, 2001). Therefore, VC is a long-term equity-based finance where the capital gain is the primary reward for the investor (Lorenz, 1989) when the exit is completed. As Bygrave and Timmons (1992), it has a significant role in the entrepreneurial process as it sustains its economic growth and revival. Although many authors have focused on the definition of Venture capital as an investment, it is important to notice, also in relevance to the scope of this study, that it has an important role in the business development of a startup. In this sense, Gompers and Lerner (2004) have argued that venture capital can be viewed as a cycle that starts firstly with the raising of a venture fund, then proceeding through investing in a business, monitoring and adding value to the firm. Then the cycle ends with the exit deal and the capital gain, and it starts over with another investment opportunity. This metaphorically coaching activity by Venture capitalists (Hellmann, 2002) and its production of value added for the startup is one of the most important considerations for entrepreneurs when selecting investors (Smith, 2001) along with the investment offers in connection with the share and types of stocks the founders would concede. This type of funding is primarily targeted towards innovative companies with high growth potential. Startups receiving venture capital funding are typically in the early stages of development and require capital to expand their operations, develop new products, or invest in marketing strategies. Venture capital investors are willing to take on higher risks compared to those of traditional lending institutions, aiming to achieve significant long-term returns. Additionally, besides capital, VCs can provide startups with strategic support, guiding them in operational management, financial planning, and connecting them with a network of partners and investors. The role of venture capital funds is closely tied to the health of an innovation ecosystem; they are responsible for advancing companies that are essentially a gamble. While their guiding principles are primarily aimed at generating financial wealth, there are also numerous impact VCs. However, even for these, the ability to make money to finance other companies is a raison d'être and a necessary condition. It's a virtuous cycle. Corporate venture capital represents another important complementary alternative source of financing, especially for technology-based new firms (Christopher, 2000), (Hellmann, 2001), (Maula & Murray, 2017).

This definition of venture capital as a value-adding process (Hellmann & Puri, 2000; 2002) is relevant to the scope of this study since it is argued that venture capital provides important helps in supporting and creating value for the invested company. VC is a particular kind of private equity. Private equity

refers to any investment in equity that is not traded on an organized exchange. This includes VC-style investments in early-stage companies but may also include investments in unregistered shares of companies that have freely tradable registered shares. It is not uncommon for firms that are engaged in VC funds also to be engaged in other kinds of private equity funds such as buyout funds; similarly, it is not uncommon for private equity funds that are focused on buyouts to allocate a portion of their portfolio to VC deals. Investments in private equity can take the form of leveraged buyouts, VC, distressed equity investments, mezzanine capital, and so forth. With a VC investment, the firm typically invests in young start-ups with growth potential and generally does not obtain majority control. In contrast, when a private equity firm undertakes an LBO transaction, the firm seeks to acquire majority control of an existing firm (Entrepreneurial finance: Strategy, Valuation and Deal Structure).

1.1 *Historical overview of venture capitalism*

Before the Second World War, investments in venture capital (originally known as development capital) were primarily dominated by wealthy individuals and families. The first modern VC fund in the United States was organized in 1946 by American Research and Development (ARD). ARD's fund was organized as a closed-end mutual fund. In contrast to the VC funds of today, it was open to investment by any investor. ARD established the practice, which persists today, of searching for high-risk deals with the potential for big wins. The fund's early-stage investment in just one of its ventures, Digital Equipment Company, accounted for roughly half of the entire return to fund investors over a period of more than two decades. Several other funds that were launched during the 1950s and 1960s imitated the structure and orientation of ARD.

One of the first steps towards a professionally managed venture capital industry was the passage of the Small Business Investment Act of 1958. The 1958 law officially authorized the United States Small Business Administration (SBA) to grant licenses to private Small Business Investment Companies (SBICs) to assist in the financing and management of small entrepreneurial businesses in the United States. The aim of this legislation was to bridge the significant gap in the capital market for long-term funding for small, growth-oriented enterprises. Additionally, it was believed that promoting entrepreneurial ventures would spur technological progress and facilitate the flow of capital starting from pioneering small businesses.

Real growth in Private Equity rose from 1984 to 1991 when Institutional Investors, such as pension plans, foundations, and endowment funds (e.g., the Shell pension plan, the Oregon state pension plan, the Ford Foundation, and the Harvard endowment fund), began allocating a small portion of their multi-billion-dollar portfolios to private investments, including specific venture capital and leverage buyout funds. In the following years, the contribution of VC capital was substantial, although it experienced significant declines during the internet bubble years. Instead, it was immediately after the financial crisis of 2007/2008 that this market received a new upward push, as it presented itself as a valid alternative to the selective lending choices of banks. While venture capital has deep roots in the USA, in Europe - except for the United Kingdom, which, following the development of the financial market, follows the American one - this type of financing is a much more recent discovery. In fact, only in the last quarter-century has the use of VC funds begun to gain ground, initially through funds of American origin. Subsequently, noticing the favourable results of these funds, the European Investment Fund (EIF), a quasi-governmental entity, was created, which initiated the growth of the venture capital phenomenon. In Italy, however, the development of venture capital has been very slow, even though the first forms of private investment arose in the mid-1990s. However, it has never asserted itself decisively.

During the period between 2010 and 2020, the world of venture capital experienced a series of significant events that shaped the industry and influenced investment trends. Here are some of the most relevant events:

- Rise of mega-funding: Over the decade, there was a significant increase in large-scale investments in startups. These "mega-fundings" contributed to increasingly higher valuations for many companies and often involved institutional investors and large corporations.
- *IPOs of highly successful tech companies*: Starting from 2010, numerous highly successful technology companies initiated initial public offerings (IPOs). Among the most significant were the IPOs of Facebook in 2012, Twitter in 2013, Alibaba in 2014, and Spotify in 2018. These IPOs led to a flow of liquidity for venture capital investors and fuelled further investments in the sector.
- *Growth of new investment sectors*: Throughout the decade, new investment sectors emerged in venture capital. These include artificial intelligence, blockchain, digital health, smart mobility, and agritech. These sectors attracted considerable attention from investors and saw increased investment.

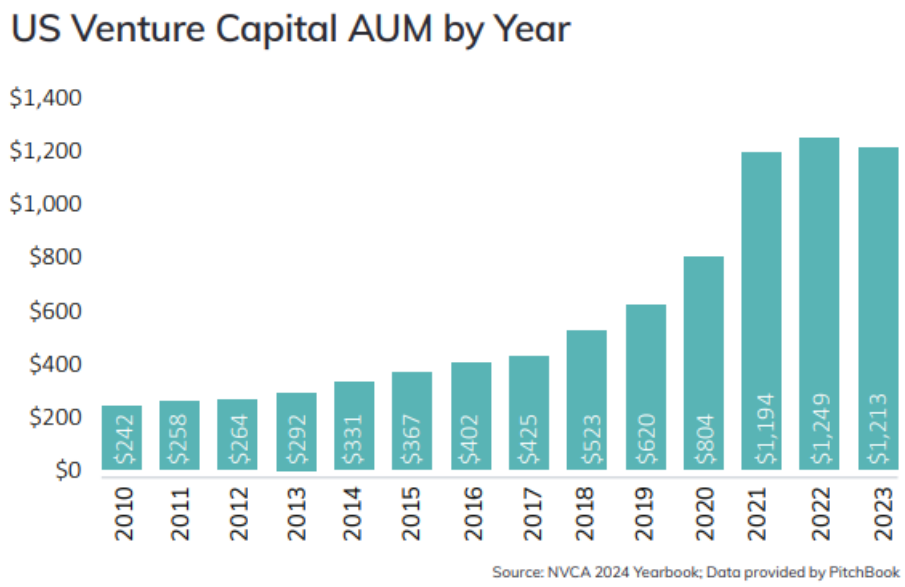
- *Rise in international investments*: International investments in venture capital grew significantly during this period. Venture capitalists sought opportunities outside their domestic markets, contributing to the globalization of the venture capital industry.
- *Impact of the COVID-19 pandemic*: The COVID-19 pandemic had a significant impact on the venture capital industry. While some areas, such as health technology and remote work, experienced increased investment, others, such as the travel and hospitality sector, saw a significant reduction in investments.
- *Regulatory advancements:* Throughout the decade, new regulations and norms were introduced to address emerging challenges in the venture capital sector, including issues related to data privacy, cybersecurity, and corporate governance.

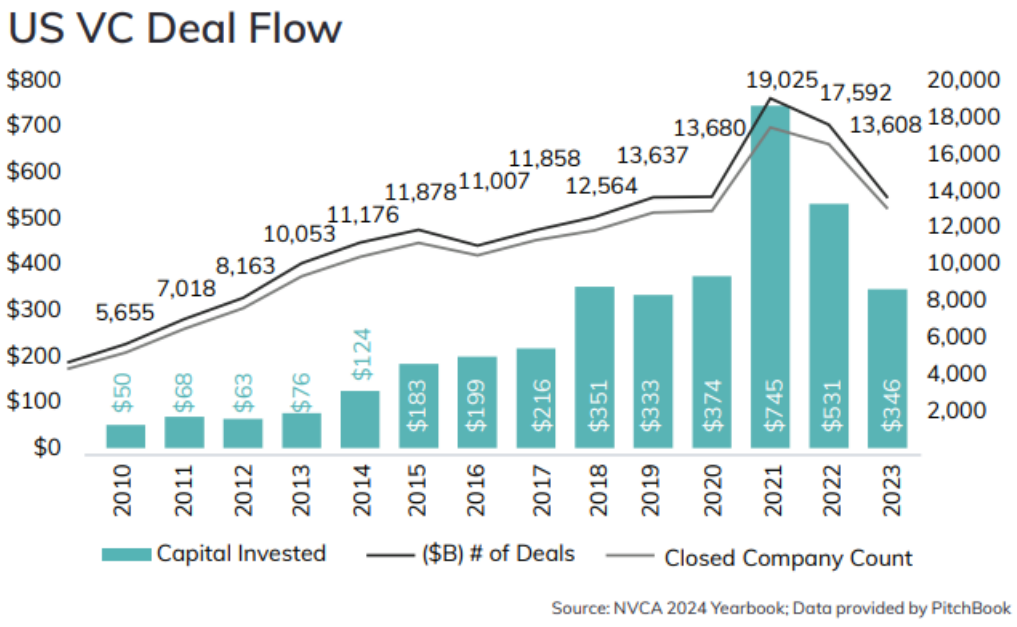
Overall, these events contributed to shaping the evolution of the venture capital sector over the decade, influencing investor strategies, startup valuations, and investment trends.

1.1.1 *US Market*

Any concerns of US VC investment slowing down due to the pandemic were squashed in 2021 which marked the fifth consecutive year of more than 10,000 companies raising VC funding and the fourth consecutive year of more than $140 billion invested annually. At the end of 2021, the US VC industry had 2,889 active venture firms. These firms collectively managed 5,338 venture funds and had approximately $995 billion in US VC assets under management (AUM). Of the $995 billion in AUM, $773 billion represented the value of existing investments, while $223 billion was dry powder (new capital to invest in startups). VC fundraising and investment activity have reached new heights in recent years, so it is no surprise AUM has also grown steadily. While AUM increased 36% from 2020 to 2021, dry powder increased by 21%, which indicates much of the AUM growth stems from existing investment values. 2022 was a tumultuous year in venture capital. The first half of the year looked like 2021, with deal counts and values at or near all-time records. However, by the close of the third quarter, a potent mixture of rising geopolitical tension and macroeconomic instability diffused anxiety across VC and the entire US economy. The second half of the year saw a marked decrease in deal count, capital invested, and exits, especially IPOs. But the news was not all bad. Venture funds hit a fundraising record in 2022, with the industry sitting on a record $312 billion in dry powder. 2023 was an unsurprising year in venture capital. $170.6 billion was invested into 13,600 deals, touching every state and territory of the United States. The VC market began a period of retrenchment in Q3 2022, and the levels of overall market activity have remained flat from the beginning of Q3 2022 to the end

of Q4 2023. The current generation of investors, who came of age in the era of globalization, had been able to depend on low interest rates, minimal trade barriers, and hyper-efficient world-spanning supply chains. But by mid-2022, investors realized that the world had changed.





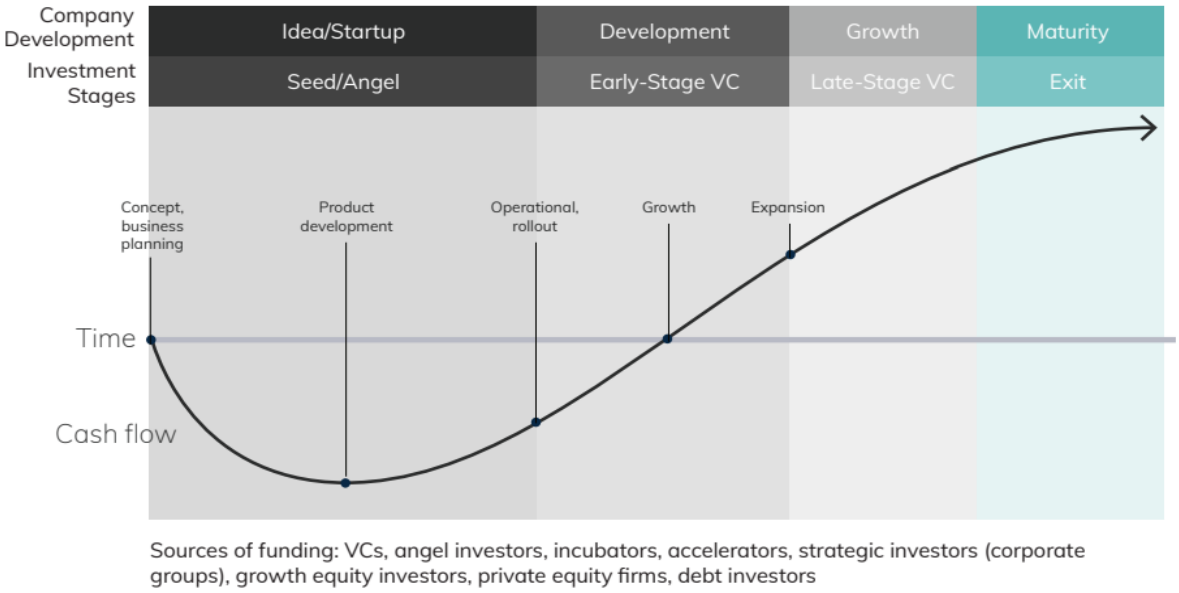
1.1.2 *Types of venture Capital*

There are several types of venture capital, each with specific characteristics and objectives. Each type of VC has its own focus, timing, investment objectives, and evaluation criteria. Here are some of the main types:

- *Seed financing*: funding of the idea, in case the venture capital investor intervenes already in the experimentation phase, when there is not yet a product, but rather an idea or an invention. The technical validity of the product/service being financed is still to be proven, and almost never does the investor deal with an already formed entrepreneur, but, more often, with a single inventor, a family, or a group of friends. Generally, there is no properly structured business plan, and these operations are carried out, in most cases, by highly specialized operators in the various industrial sectors concerned. The necessary skills are therefore, in addition to managerial, mainly technical and scientific. The average investment size in seed capital is between €100,000 and €150,000. Moreover, angel investing, although not strictly considered a type of venture capital, it plays a significant role in startup financing. Angels invest their own money in the early stages of a startup's development in exchange for ownership stake.
- *Early-stage Venture Capital*: This type of VC focuses on financing startups in the early stages of their development, often before they have generated significant revenue. It can be imagined just after the Seed Financing, which finances the earliest stages, and includes Series A, which is the first institutional funding round for a startup.
- *Late-stage Venture Capital*: This type of VC targets more mature and established companies that have already proven their market viability and generated consistent revenue. It includes funding rounds such as Series B, Series C, and beyond.
- *Venture growth*: Rounds are generally classified as Series E or later (which we typically aggregate together as venture growth) either by the series of stock issued in the financing or, if that information is unavailable, by a series of factors, including the age of the company, number of VC rounds, company status, and participating investors.
- *Venture Debt*: This type of financing involves offering loans to startups, often in addition to equity financing. Venture debt can be used to finance growth and expansion without significantly diluting the founders' ownership stake.

- *Corporate Venture Capital (CVC)*: Companies operating in specific sectors invest directly in startups through their own venture capital funds. This type of VC can offer startups access to resources, expertise, and strategic partnerships within the parent company.
- *Social Venture Capital*: This type of VC focuses on investments in socially responsible or impact-driven enterprises. Companies funded by this type of VC often aim to generate a positive impact on society or the environment in addition to financial profit.
- *Government-backed Venture Capital*: In some countries, there are government investment programs that provide funding to promising startups. These programs may be designed to promote innovation and economic development in specific sectors.

Figure below shows the timeline of investment stages of a VC fund following firm's development.



1.2 *Organizational structure of venture capital funds*

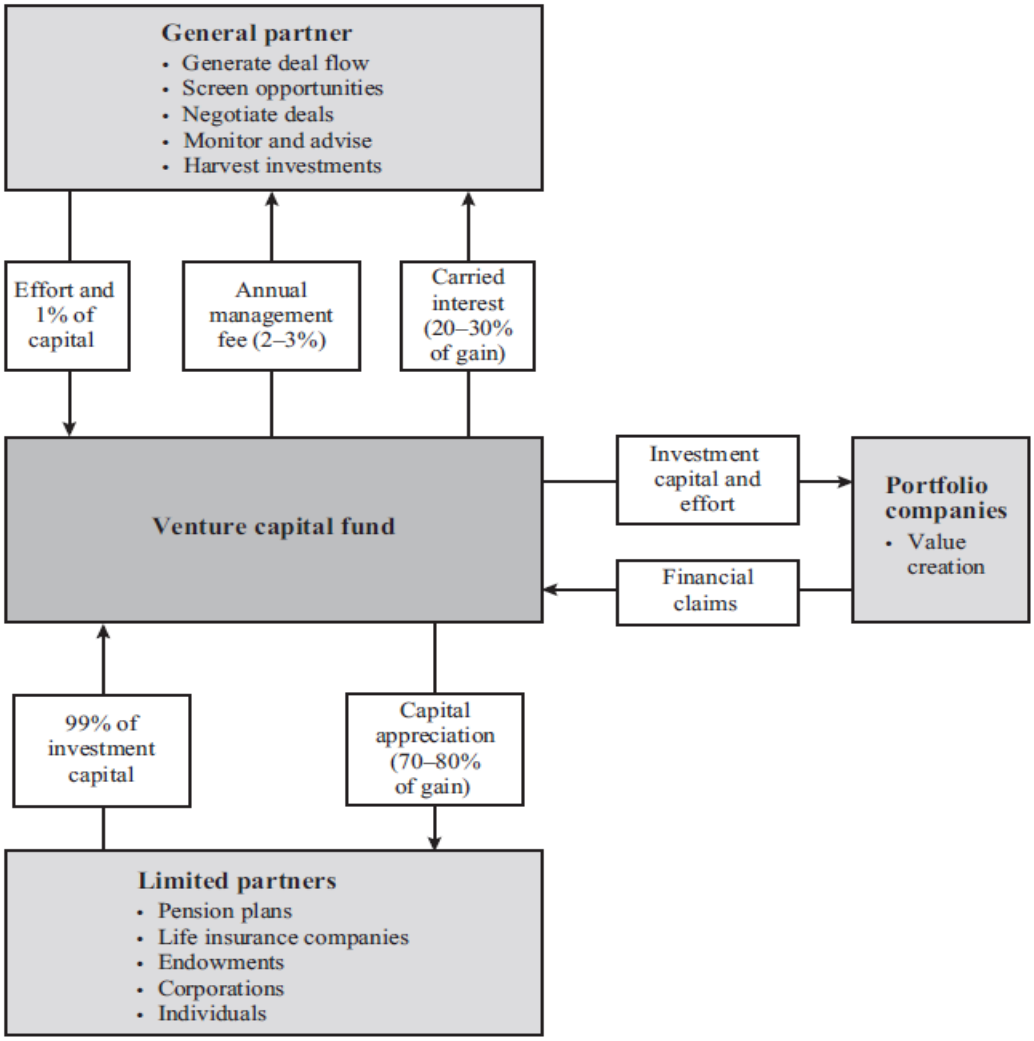
Successful VC investing depends on finding solutions to an array of problems. The fund manager must sort through a plethora of business plans, each describing a venture with a negligible operating history. In addition to identifying the few ventures that have some potential for success, the investor must be able to add enough value to the deals to cover the extra costs of administering the fund's investment portfolio, including the return on the VC's commitment of effort. Beyond addressing these problems, the manager must be able to commit the fund's capital for long periods with little hard evidence that value is being created for investors. The manager must be able to expand, contract, and

refocus efforts in response to changes in opportunities and new information about prospects for success, as well as be able to redeploy the VC firm's human capital when its ability to add value to a venture wanes.

1.2.1 *The Limited Partnership structure*

To address these challenges, the VC limited partnership has become the dominant organizational form for VC investing. A VC limited partnership has a finite life span, typically 7– 10 years. The general partner (GP) is the fund organizer and is responsible for raising investment capital from the limited partners (LPs) and deploying the capital by investing in portfolio companies. On the capital deployment side, the GP screens opportunities based on quality and compatibility with the GP's capabilities and with timing of the fund's capital flows. When an attractive investment prospect is identified, the GP negotiates the terms for investing. Committing the fund's financial capital to a venture also commits some of the GP's human capital to ongoing involvement in monitoring and advising. The intensity of these efforts varies across funds. Philosophies differ, and some ventures warrant more active investor involvement than others. Finally, the GP is responsible for harvesting the investment. Harvesting enables the fund to provide a return to the LPs and allows the GP to redeploy human capital to other investments. Raising the capital for a VC fund is a costly endeavour. The GP commits a substantial amount of time to marketing the fund to prospective investors and to managing relations with existing investors. Most institutional investors require periodic (at least annual) reporting, including valuations and status reports on the fund's portfolio companies.

Figure that follows shows the functioning of a VC fund.



The GP's primary contribution to the fund is in the form of effort. In addition, though specifics vary, the GP normally commits 1 percent of the fund's capital; limited partners provide the other 99 percent. A small fraction of invested capital is used each year to cover costs related to managing the operation of the fund. The balance is invested in portfolio companies, in exchange for financial claims on the companies. If and when these investments are harvested, the returns are distributed to LPs, first to repay their initial investments, with the balance (the capital gain) being shared between the LPs and the GP. Normally, the LPs receive 70 to 80 percent of the gain and the GP receives the balance as a "carried interest".

1.2.2. *Waterfall and clawbacks*

Returns to LPs and the GP follow a progression. Commonly, the progression is as follows:

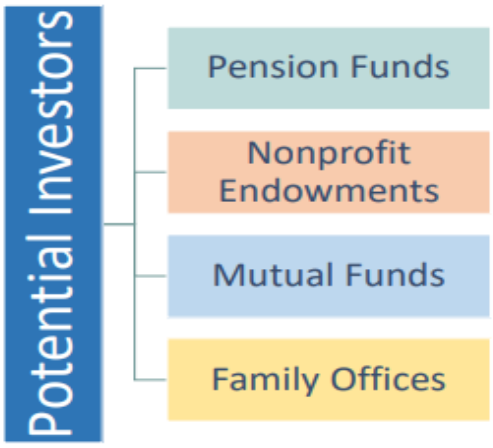
1. Payment of management fee.

2. Return of LPs' principal.
3. Sometimes a preferential return, such as 4 percent per year, to the LPs.
4. A carried interest portion to the GP corresponding to the LPs' preferential return.
5. The remaining portion of capital gain due to LPs.
6. The GP's remaining carried interest.

The priority in distributions is commonly referred to as a waterfall. Challenges arise because, in a strict application of the waterfall, the GP would not realize any carried interest return until all of the assets of the fund had been liquidated through sale, acquisition, or failure of all investments. Normally, the GP does not want to wait 10 years or more until any return is realized. Accordingly, the waterfall distributions are often handled asset by asset. Thus, if the fund invests in a venture that has a successful IPO early in the life of the fund, some fraction of the proceeds may be distributed to the GP as carried interest. But what happens if the other ventures do not do well, so that the LPs do not realize the overall return that they had expected? In such cases, the GP may be subject to a "clawback" provision that requires the GP to return "excess distributions" to the partnership. A clawback represents the GP's promise that it will not receive a greater share of the distributions than was bargained for.

1.2.3. *Capital commitments, Capital Calls and Reputation*

VC is a market where the LP's reputation is as important as the LP's money. When a new fund is created, the GP seeks capital commitments from investors while it assesses investment opportunities and negotiates deals. Each LP's commitment is formalized in a subscription agreement. Actual investments in new ventures are not made until the fund's "closing." A closing is a legal process in which the commitments are used to define an ownership group. A fund closes when sufficient commitments of capital have been made and sufficient investment opportunities have been found to warrant going forward. Each investor's commitment is conditional on the fund generating sufficient commitments from other investors to reach the minimum total for closing. When the closing occurs, the GP can make an initial "capital call" on the investors, and then the investors have a short time (such as 30 days) in which to deliver the funds.



Source: NVCA 2023 Yearbook; Data provided by PitchBook

To achieve the best performance, the GP makes capital calls only when there are immediately attractive portfolio investment opportunities. The investors may receive several capital calls during the first few years of the fund's life. Because each investor is expected to deliver capital when called upon, the investors' reputations are important to fund operation. Failure to respond to a capital call could cause the fund to miss investment opportunities and otherwise disrupt fund operation. Because of this, penalties for missed capital calls are substantial. Use of closing dates and capital calls enables a VC fund to operate with very little internal liquidity. The need for liquidity does not disappear, however; it is shifted instead to the investors.

Consequently, the typical investors are those whose ordinary levels of liquidity are sufficient to enable them to respond to unpredictable capital calls. The upshot is that GPs seek investors who can reliably commit their capital for the entire life of the fund. What better place to look for such investors than institutions such as pension funds, endowments, and life insurers, all of which have predictable needs for liquidity that are small relative to the overall size of their investment portfolios? By extension, the GP screens for individuals who can reliably commit to maintaining their capital investments. The VC limited partnership agreement sets out conditions for investing, requirements for closing, distribution requirements, and the other terms.

1.2.4 *Why limited partnership?*

The LP structure solves many of the managerial problems that arise in new venture investing. Because investors can participate in multiple funds and can diversify across a broad array of other investments, the

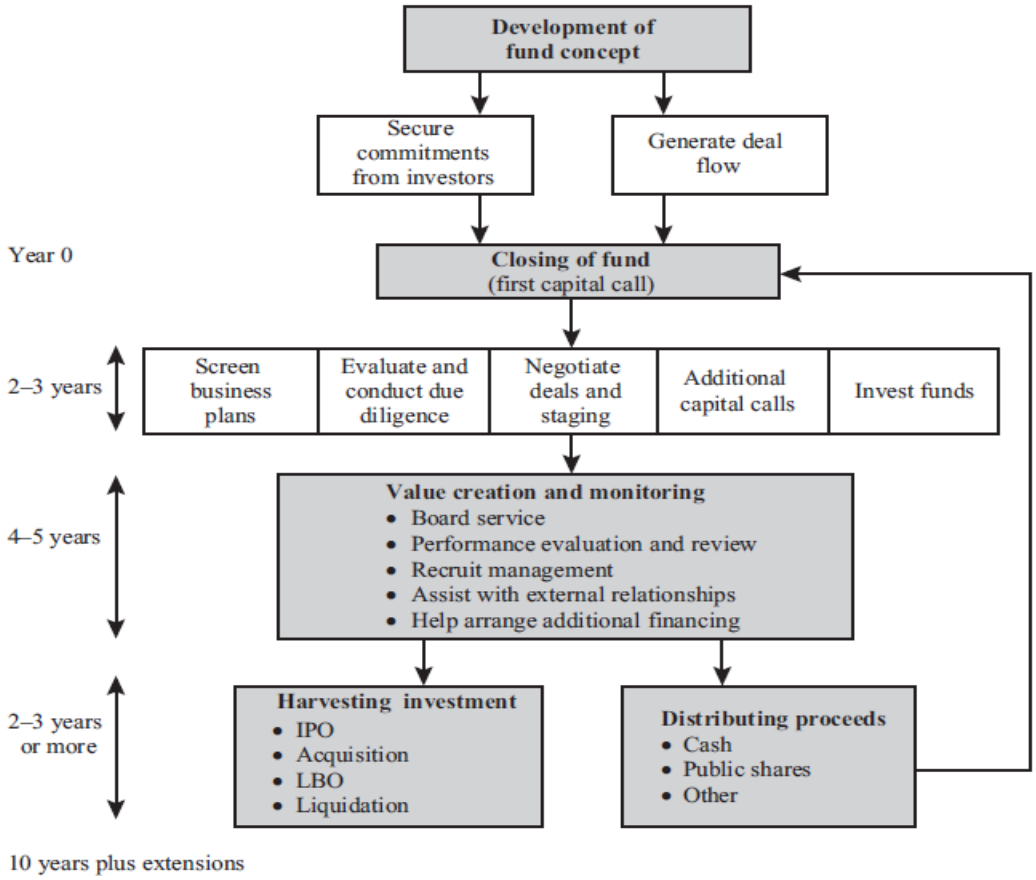
GP is free to concentrate on opportunities in which the partner's expertise adds the most value. The finite life of a VC fund subjects the GP to ongoing market discipline. The LP structure also enables the pool of VC funds to expand or contract depending on the opportunities perceived by the GP. Finally, the structure makes efficient use of the liquidity that naturally accrues to large institutional investors.

The downside, compared to the closed-end fund structure, is that most individual investors in the United States are foreclosed by SEC rules from investing directly in VC partnerships. Reliance on the LP form, however, is not universal. Some countries, China for example, do not support the legal institution of partnership. Many have adopted the platform of a corporation and attendant limited liability. For various reasons, however, corporations are not as suitable for VC investment as are partnerships.

During the mid-1990s, a few new venture incubators sought to respond to public demand for the opportunity to invest in VC and to tap the public equity market by adopting structures that would enable them to go public. To avoid the problems discussed previously, these companies sought to reorganize as operating companies to circumvent direct application of the ICA. However, the SEC safe harbour provisions are quite limiting and force the companies to devote significant effort to maintaining a balance of ownership interests that enables them to be classified as operating companies instead of mutual funds. The dual objectives of finding and pursuing new venture opportunities on one hand and avoiding closed-end fund status on the other are conflicting, and it is not clear that a viable strategy exists. The companies that went public with this model in the 1990s now have lost more than 99 percent of the value they traded for at the peak of the tech rally in 2000.

1.3 *The investment process*

Figure below illustrates the VC investment process and its relation to fund maturity.



After the concept is developed, the GP makes concurrent efforts to secure commitments from investors and to generate deal flow. The fund closing and first capital call mark the point when the GP begins to build a portfolio of investments. Some VC statistics are based on funds grouped by "vintage year." The vintage year is the year of the first capital call or first investment, even though some activities commence months earlier. Most funds are intended to last about 10 years. The role of the GP changes over the life of the fund, from activities related to investing capital to those related to managing and monitoring investments and finally to those related to harvesting.

Normally, it takes two to three years before a fund is fully invested. During this period, the GP is busy screening plans, conducting due diligence on prospective investments, and negotiating deals. Corresponding to these efforts, the GP makes additional capital calls and seeks to place the entire commitment with new ventures. While the subscription agreement refers to a "call down schedule,"

in practice the timing can be accelerated or extended depending on how quickly appropriate deals are identified.

A fund can also have more than one closing. During the fundraising stage, the GP may bring in new investors and oversee a second or third closing. A closing defines a group of investors who are treated identically as the fund progresses. Managing a fund with multiple closings gives rise to potential opportunism as it enables investors to get into the fund at different times. Existing investors may be concerned with the potential for opportunism by new investors who might try to buy into existing successes at valuations that are too low. Conversely, new investors may be concerned that existing investors will try to exploit information advantages or get better deals for themselves. Thus, having a second closing with a different investor group elevates the importance of accurate valuations of portfolio companies and fund investments in them. Fund managers can try to address potential opportunism by segregating existing and new investments into separate funds. Of course, an investor can also avoid opportunism by acquiring the right, ex ante, to participate in each closing at the same level (e.g., 5 percent of each closing). However, this may increase the investor's financial commitment beyond what was desired.

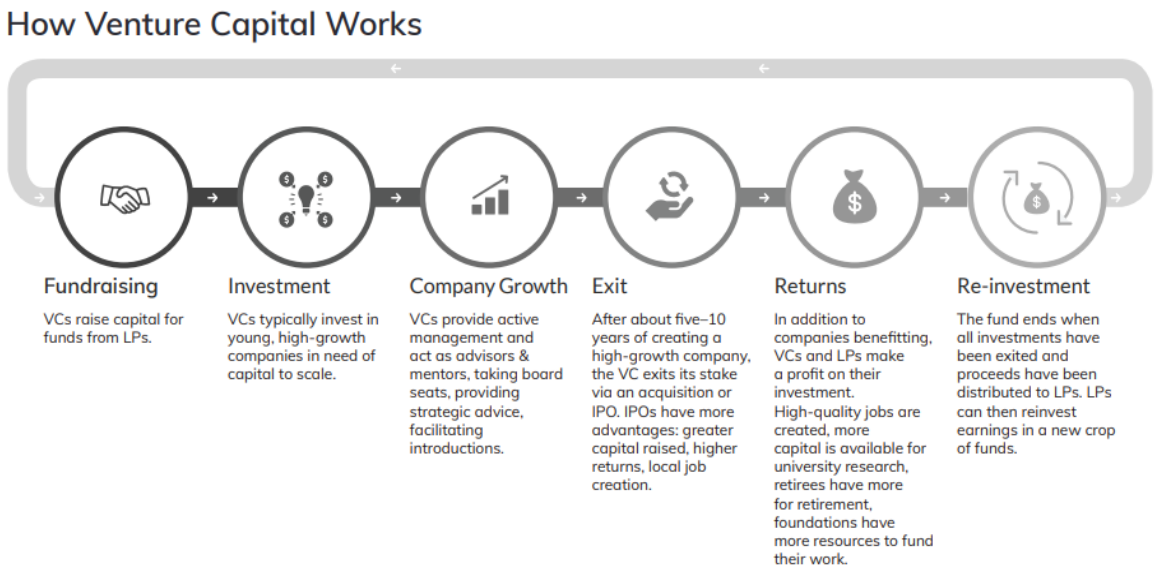
Following investment in a portfolio company, the GP's responsibility shifts to value creation and monitoring. Service on boards is routine, as is continual performance evaluation. In addition, the GP often is involved in recruiting the management team, building relations with trading partners, and helping to arrange subsequent financing.

Most GPs hope to harvest their investments about five years after the investments are made. Ideally, the GP continues to work with a portfolio company as long as the GP is able to add value and until a point when a liquidity event is possible. Harvesting enables investors to realize the gains on their involvement, through receipt of either cash or publicly tradable shares. Distributions are natural milestones for the GP in its efforts to establish another fund. The harvesting phase is typically two to three years. The long window allows the GP to time the exits in light of market conditions and company-specific factors.

Because portfolio companies progress at different rates, the periods of investment, value creation, and harvesting within a single VC fund overlap. Typically, the LPs can agree to extend the life of the fund for several years to permit orderly liquidation of investments. The finite life of the fund limits and controls the GP's behaviour. A GP that is successful in adding value will have little trouble

generating commitments to a new fund, whereas one that has not been successful is unlikely to attract new investors. In practice, VC firms usually try to launch new funds more frequently than every 10 years but with enough time in between so that investors can assess whether the fund seems to be on track for success. Here again, long-term relationships and reputation are important. Compared with the public equity market, prospective investors are few and can easily communicate with each other. Concern with reputational damage disciplines the GP and protects investors from short-run opportunism.

Figure below summarizes the process of VC investments.



1.4 *How venture capitalists add value*

GPs charge substantial fees for fund management and share significantly in the success of their investments. Although GP returns may seem excessive, VC funds attract most of their financial resources from sophisticated investors. The investors, either directly or through gatekeepers, continuously monitor the actions and decisions of the GP. The sophistication of VC investors supports the inference that the compensation structures are justified. If so, it must be that the fund managers contribute significantly to performance; sophisticated investors do not reinvest with GPs in whom they do not have confidence. VC firms, if they are to survive, must be able to add sufficient value to cover their compensation. Over and above the efforts to create value for an individual fund, the GP seeks to maximize value for the VC firm. GPs expect to realize the benefits of information economies by operating multiple funds. They also expect to maximize the value of the firm's human capital by

deploying experienced partners to work with multiple portfolio companies. This means that when one fund is being liquidated, another often is being formed, so that the firm's human capital is used efficiently over the course of the investment/monitoring/harvesting cycle. Managing a VC fund is complicated because the fund supplies a joint product consisting of investment capital and consulting services. The gross return must cover both the opportunity cost of the investment capital and the services of the GP.

1.4.1 *Selecting investments and negotiating deals*

The ideal ventures to include in a portfolio are those in which the GP can add significant value without an excessive commitment of time. Other things equal, an investment is more attractive if it appears to be well managed and unlikely to require much assistance. Such a company, however, should also be able to negotiate a favourable deal with the GP. Beyond this, a venture is more attractive if its needs meld with the specific capabilities of the GP. Simple metrics of fit include industry focus, stage of development, and location.

A prospective venture is more attractive if the expected time commitment for VC involvement corresponds to a time over which the market can come to recognize the value of the venture so that exit is possible. If the market takes too long to recognize value, the GP may be compelled to continue to devote time to the venture. This involvement can extend beyond the point where the GP is adding value, especially if it causes the GP to forgo work on other ventures.

Because LPs are concerned with earning returns that exceed what they can earn from other investments, the GP does not want to raise capital before it is needed. Similarly, the GP does not want to hold a portfolio company after the market recognizes its value. Market conditions affect the decision calculus. Ideally, the manager seeks to create the fund during a period when opportunities to invest in new ventures are abundant and seeks to harvest when the market is receptive to public offerings.

There is some evidence that VCs are able to time distributions to correspond with periods when market values are high. In choices between IPOs and private rounds, VC-backed biotech companies tend to select IPO after run-ups in the market values of biotech stocks and before market declines (Lerner, 1994). Ball, Chiu, and Smith (2009) examine VC-backed exits by IPO or merger over a longer period and more sectors. Consistent with Lerner, they find that IPOs are selected after market

or sector run-ups. However, the negative performance after IPOs appears to be idiosyncratic to the sector and period studied by Lerner. They find no evidence that VC-backed firms can spot opportunities to issue at times when investors are overly optimistic about the stock market or about the sector.

1.4.2 *Selecting entrepreneurs who are likely to be successful*

VC firms evaluate thousands of ventures each year. A primary component of the evaluation is assessing the entrepreneur's knowledge and skills. In a field study based on 51 VC firms (86 deals), (Smart, 1998) documents practices related to the methods VC firms use to value the entrepreneur's human capital. Smart reports that venture capitalists devoted many hours to valuing the entrepreneur's human capital. They spent more than half of that time questioning the management team regarding the venture. Only 21 percent of the firms conducted a written job analysis, preferring instead to spend time in face-to-face discussions about business-related topics. Smart also finds evidence of cognitive bias in that more VCs in his sample overestimated the value of the human capital than underestimated it. His findings support the much-quoted remark of VC Arthur Rock: "Nearly every mistake I've made has been in picking the wrong people, not the wrong idea."

1.4.3 *Changing the management team*

A study of Silicon Valley portfolio companies indicates that professional managers replace more than half of founding entrepreneurs. In about 40 percent of these cases, the founder retains a position at the company; in the remainder, the founder has no discernible tie with the company after being replaced.

In another study, based on survey data, (Fiet, 1997) provide perspective on the types of "mistakes" that can lead to dismissal and the contractual covenants that are effective in aligning managers' incentives with the interests of the VC fund. The more important findings include:

- Limiting salaries of managers reduces the likelihood of dismissal.
- Earn-out provisions in the contract reduce the likelihood of dismissal.
- Faster revenue growth per employee reduces the likelihood of dismissal.
- The number of board seats is negatively related to the likelihood of dismissal.
- The number of VC-controlled board seats is positively related to the likelihood of dismissal.

- Explicit dismissal covenants are not related to the likelihood of dismissal.

These results do not establish causation. A VC that is concerned about the capabilities of the entrepreneur is more likely to negotiate performance-based covenants and require board representation. An entrepreneur who wants to signal confidence may be willing to accept unfavourable board composition in exchange for more funding or favourable terms.

1.4.4 *Monitoring and Advising Portfolio Companies*

VCs can add value by selecting and monitoring portfolio companies or by providing services to the companies. Evidence of the value of service to portfolio companies is mixed. One study finds that entrepreneurs do not perceive much value added through VC board service, except possibly by top-ranked VCs. There is little evidence that the managers of portfolio companies value the nonfinancial advice of VCs, except when the manager is new or existing managers are moving into areas where they lack experience.

On the positive side, there is evidence that VC backing is associated with job creation, higher levels of patent awards, and more citations to patents. It also appears that VC backing plays a certification role in the IPO process, as VC backing is associated with less severe IPO under-pricing, lower total cost of going public, and going public sooner.

Consistent with the certification role of VC backing, evidence indicates that the market reacts negatively when, instead of distributing cash to the LPs, VC firms distribute shares of a portfolio company. Distribution of shares may signal that the VC believes the shares are overvalued or that the VC is no longer adding value to the company. Although the evidence suggests that VC involvement does create value, it is unclear whether the benefits derive from this involvement or, more simply, from the selection of companies in which to invest.

1.4.5 *Luck versus Skill: What Accounts for Venture Capital Success?*

Kaplan and Schoar (2005) find that the returns to VC persist over funds of the same VC firm. That is, high VC returns for one fund imply that returns of subsequent funds offered by the same firm will also be high. Sorensen (2006) finds that companies funded by more experienced VCs are more likely to go public. Krishnan et al. (2011) find that VC firms with high shares of prior IPO activity tend to

have higher percentages of investments that result in an IPO and better performance after the IPO. Nahata (2008) finds that new ventures backed by VCs with superior reputations are more likely to go public and tend to go public earlier.

Smith, Pedace, and Sathe (2009) find that fund reputation is positively related to fund IRR (internal rate of return) and the cash-on-cash return to investors in the fund. Sorensen (2006) poses the question of whether persistence of fund performance is due to the skill of the VC firm or luck. Conceivably, a VC firm that is lucky with an early fund can attract better deal flow and raise capital from investors with less effort than a first-time fund or one with a track record of poor performance. He finds evidence that luck plays an important role but that the direct influences of the VC firm also matter. Smith, Pedace, and Sathe (2009) find that both style persistence and sector experience are positively related to fund performance; but they also find that agility, the ability to move quickly into a new sector, contributes positively to returns.

1.5 *Syndication and Venture Capital*

Syndication occurs when VC funds co-invest in ventures. Typically, for any given venture, one fund is the lead investor and the others are co-investors. The lead normally is the fund with the highest level of direct involvement with the venture and is the one most likely to serve on the venture's board of directors. Syndication is a reciprocal, ongoing, informal relationship, in which VC funds tend to collaborate by taking turns serving as lead investors or co-investors. The practice enables VC firms to pool their human capital resources and to spread the investments of their funds over larger and more diverse portfolios. In countries where VC investing is well established, syndications among reputable VCs are common. In emerging economies, the lack of both attractive investments and established VC firms is a significant impediment to syndication and industry growth.

Brander, Amit, and Antweiler (2002) identify two primary reasons for syndications: (1) syndications may add value to ventures when additional VC firms, with different skills and knowledge, are actively involved in management, and/or (2) syndications may provide reciprocal certification of investment opportunities. Using Canadian data, the authors find that syndicated investments have higher returns than investments that are not syndicated. They interpret this finding as favouring the value-added rationale.

On the other hand, Hochberg, Ljungqvist, and Lu (2010) explore the networking aspects of VC, including syndications, and find that incumbent VCs may jointly impede entry of other VC firms into

a local market. There may be different reasons for later-round syndication than early-round. Based on a study of biotech investment rounds, Lerner (1994a) finds that in first-round investments, established VC firms tend to syndicate with each other and avoid less experienced firms. Later rounds are more likely to involve syndicated investments by less established VC firms. Lerner interprets the evidence as being consistent with "window dressing" in the syndication of later-round investments.

Admati and Pfleiderer (1994) develop a rationale for later-round syndication based on informational asymmetries. Because the first (lead) investor may have an informational advantage over subsequent investors, one way to avoid opportunism is for the lead to maintain a constant share of the firm's equity. If the venture needs to raise a large amount of capital in a later round, this can imply that additional investors must provide a portion of the later-round financing. The lead investor normally is paid for assisting in the syndication. The typical fee is 2– 3 percent of the money raised from co-investors. Sometimes they share the fee with the other syndicate members.

1.6 *Venture capital contracts with portfolio companies*

A typical VC fund portfolio results in a small number of highly successful investments, together with a much larger number that are unsuccessful. Because of the quest for high returns, the process by which GPs search for investment prospects can give rise to adverse selection. Suppose the VC develops financial projections for each prospective investment and then applies the hurdle rate to select its investments. Some prospects will be screened out because the financial projections are too low, given the hurdle rate. Adverse selection arises partly because ventures that are overvalued by the VC are more likely to survive the screen. Now, consider the decision of an entrepreneur whose venture has survived the screen. Some entrepreneurs will believe that the VC firm has overvalued their opportunity; others will believe that theirs has been undervalued. Entrepreneurs who perceive that their ventures have been overvalued are more likely to accept the VC's financing offer, giving rise to the adverse selection effect. From the investor's perspective, adverse selection is a problem only if some investors use better decision-making processes than others. Lerner (1994b) points out that syndication is one way of dealing with the problem. As discussed above, when a deal is syndicated, several VC firms contribute funds to a venture, sharing in the due diligence efforts of the lead investor and pooling the risk, including risk associated with adverse selection. Syndication, however, is no substitute for developing methods of project evaluation that deal effectively with adverse selection and other valuation issues.

One way to address the adverse selection problem is to adopt contracts that limit investor reliance on ex ante due diligence and valuation. Staging, by forestalling part of the investment decision until the investor gains experience with the entrepreneur and until more information arrives about the prospective success of the venture, has this effect. Staging also affords greater control to the investor while enabling the entrepreneur to retain a larger ownership stake. Another way to address the adverse selection problem is to employ financial contracting structures that test the beliefs of the entrepreneur, align the interests of the parties, and enable parties with different expectations to transact with each other.

VC investors usually hold convertible preferred stock that gives them a preferential claim in case of liquidation. This shifts more of the risk of failure to the entrepreneur. Entrepreneurs who are concerned with failure are likely to be discouraged by the risk exposure. The use of convertible shares by the investor may discourage the entrepreneur from excessive risk taking. Clearly, use of contingent claims to allocate ownership, such as with performance-based rights or a ratchet, can help screen investment prospects. Staging and related contractual devices have a downside. Staging can encourage myopic behaviour by the entrepreneur, because later-round investments are contingent, to some extent, on venture performance. The concern is most acute when subsequent investment is guaranteed provided that a certain performance benchmark (e.g., a revenue target) is achieved or when the allocation of ownership claims depends on realizing a specific target (as in the case of a ratchet). Short-sighted behaviour is discouraged if the conditions for making follow-on investments are not explicit and are subject to the investor's judgment or where the benchmarks are good proxies for actual success. Because of these concerns, some VCs avoid linking follow-on investment or allocation of ownership claims to specific benchmarks. VCs protect themselves and their investors in other ways. For example, put options, demand registration rights, and similar provisions help ensure that the investor has an opportunity to harvest. Pre-emptive rights and rights of first refusal enable the investor to maintain an ownership share if the venture is a success. Employment contracts, share vesting provisions, and noncompete clauses limit the entrepreneur's ability to appropriate the intellectual property and human capital of the venture. Termination rights, on the other hand, protect the investment against the entrepreneur's mismanagement and protect the investor from excessive risk taking by the entrepreneur. Rights to receive information and to board representation ensure that the VC can monitor the venture effectively. Figure below summarizes some of the standard provisions of a term sheet for an investment in preferred stock by the VC fund. The arrangements described above are not completely one-sided. Granting protection to the VC enables the entrepreneur to retain a larger ownership stake. Some contract provisions also protect the entrepreneur. For example, the VC's right to terminate the entrepreneur often is offset by a put option that gives the entrepreneur the

ability to sell out of the deal if the termination option is exercised. In addition, demand registration rights may be offset by a call option that gives the entrepreneur the right to repurchase the investor's shares. Finally, the IPO process can give a successful entrepreneur the ability to regain control of the venture from VC investors, even without achieving majority ownership. Taking a company public usually results in more disperse ownership, in which case the entrepreneur may be able to regain control, even with a limited ownership stake. Even if the venture does not go public, performance-based rights to acquire additional shares can accomplish much the same result.

Provision	Description and purpose
Description of financing round	
Closing date, investors, amount raised, price per share, pre-money valuation, capitalization	Describes the general parameters of the financing round. Pre-money valuation if the value implied by the price per share before including the proceeds of the round. Capitalization describes the VC structure, including preferred shares used in the funding round.
Charter provisions (establishing rights and privileges of preferred investors)	
Dividends to holders of preferred shares	Describes how dividends will accrue to preferred shareholders and timing and conditions under which dividends are paid.
Liquidation preference	Describes the order of payment of proceeds from liquidation, for example, first return the proceeds invested by preferred shareholder, then pay preferred dividends, then pay common dividends, then share the balance pro rata.
Preferred stock voting rights	Such as voting on an as-converted basis and the right to vote separately to elect a specified number of directors.
Conversion rights	Such as the right to convert to common at any time, adjusted for accrued preferred dividends.
Antidilution provisions	Such as a right to retain ownership share or a full or partial ratchet provision, and conditions under which the provision would not apply, such as a conversion of the preferred shares.
Mandatory conversion	Conditions under which a public offering of the venture would force conversion of the preferred shares.
Pay-to-play provision	Requirement for preferred investors to participate in down rounds or convert to common or lose some preferred rights.
Redemption rights	Right of preferred investors as a group to demand redemption of investment from available funds.
Stock purchase agreement	
Representations and warranties	Describing such things as ownership of intellectual property by the venture.
Conditions to closing	Due diligence requirements.
Counsel and expenses	Describes who pays for company counsel and investor counsel.
Investor rights agreement	
Registration rights	Describes rights and conditions for registration of shares issued to preferred investors, including demand registration, piggy-back, who bears cost of registration, and lock-up provisions on trading.
Management and information rights	Rights of preferred investors to be involved in management and to have access to certain information.
Right to maintain ownership share	The right to participate in subsequent rounds to avoid dilution of ownership share.
Other rights	Such as noncompete employment contracts, board meeting requirements, stock option vesting terms, and key person insurance.
Rights of first refusal and co-sale	
First refusal and co-sale	First right to purchase shares offered by the company and right to sell when other owners sell.
Voting rights	
On board of directors	Describes how preferred shareholders vote on board.
Drag-along	Right to compel common to vote with preferred on liquidation event.

SOURCE: *Based on National Venture Capital Association sample term sheet.*

1.7 *The role of reputation in venture capital markets*

Reputation plays a role in the functioning of most markets; the market for VC is no exception. Reputation is an important enforcement mechanism for the explicit contract terms, such as the LPs' commitments to respond quickly to capital calls. The alternative is to insist that investors place committed funds in escrow accounts until the GP needs them. But this alternative impedes the LPs' abilities to invest the funds efficiently until they are needed. Accordingly, there can be significant advantages to working with incomplete, flexible contracts, where reputation substitutes for explicit contract terms. If the GP can depend on the LPs not to make opportunistic decisions, then elaborate provisions to limit the choices of the LPs can be avoided. If the VC can trust the entrepreneur to act in the interest of the venture, then specific provisions designed to shift risk to the entrepreneur are less important. Contractual relationships that are based partly on the reputations of the parties can generate higher returns for the parties. Evidence of this implication is manifested in several ways. First, the preference of VCs to raise funds from institutions, whose reputations are more easily assessed, demonstrates that the cost of dealing with individual investors is expected to be higher. Second, well-established VC firms can raise larger amounts of capital more quickly, reducing the overall costs of fundraising. Third, well-established VCs are able to command higher fees and a larger carried interest, which is evidence that investors anticipate superior overall performance from those VCs. Finally, the ability of established entrepreneurs to raise capital more easily than first-time entrepreneurs indicates that investors rely on the entrepreneur's experience and demonstrated commitment as an element of the negotiation. Several studies support the view that reputation is important for understanding the functioning of the market for VC. Barry et al. (1990) find that IPOs with VC backing are less underpriced than those without such backing. The findings suggest that VC investors perform an important monitoring function. Similarly, Megginson and Weiss (1991) find that VC involvement with companies that are going public leads to reduced under-pricing and interpret the finding as evidence that VC backing works as a certification of value. Gompers and Lerner (2004) find that reputation is a positive factor in the ability to raise capital.

One economic rationale for a VC firm's investing in reputation is that, because the firm's human capital is specific to new ventures, the firm benefits by developing a reputation for not selling overpriced shares in IPOs. Evidence indicates that more established VC firms are better able to bring portfolio companies public at early stages of development than are other VCs. The data indicate that VCs with established reputations seek to maintain their reputations by selling shares in IPOs only if they expect the IPOs not to be overpriced. Established VCs are also more likely to forgo selling shares

when IPO shares are overpriced or fully priced. In effect, they are more inclined than less well-established VCs to sacrifice immediate return for long-run gain.

Gompers (1996) provides evidence that VC funds may seek to build reputations in ways that are not necessarily in the best interest of the companies in which they invest. The study reports that VCs that are not well established tend to bring companies public too early. The study concludes that such funds are engaging in "grandstanding" in an effort to demonstrate high rates of return to attract capital. Consistent with this view, VCs that are not well established tend to raise new funds shortly after IPOs of portfolio companies.

2. ITALIAN STARTUP, SME AND VENTURE CAPITAL MARKET

One of the purposes of this study, as will be argued in the last chapter on the empirical analysis, is to investigate (Model A) whether venture capital investment is a relevant factor in the economic and financial growth of the invested company. The second research question pertains to the investigation of the characteristics are, quantitative and qualitative, of innovative startups that lead to the realization of this type of investment (Model B).

It is therefore important in this section to analyse the world of startups and venture capital in Italy. First, a formal definition of startups and SMEs will be provided, referring to Italian regulations. The quantitative parameters and main qualitative characteristics that companies must possess to be classified as such will then be introduced.

Second, taking the 2023 Annual Report to Parliament prepared by the Ministry of Economic Development (MiSE) as the main source, the territorial and sectoral distribution of Italian startups and SMEs will be analysed.

Third, the regulatory framework for startups and innovative SMEs that the legislature has enacted and put in place in the past years to incentivize and foster the growth of such companies will be analysed. Specifically, the analysis will focus on the interventions since the so-called "Growth Decree 2.0" and the new initiatives implemented during and after the Covid-19 pandemic. The objective of this analysis is to provide a clear overview of the Italian situation to understand what the main factors are in incentivizing the growth of innovative startups and SMEs in Italy, as well as Venture Capital.

Finally, Venture Capital Italian market will be analysed. The main reference adopted throughout this analysis is the 2023 Venture Capital Monitor Report, edited by VeM “Venture Capital Monitor”, an Observatory established in 2008 through a collaboration between AIFI and LIUC – Università Cattaneo, active within the University's Business School, with the contribution of Intesa Sanpaolo Innovation Centre and E. Morace & Co. Law Firm, and with the institutional support of CDP Venture Capital SGR and IBAN.

2.1 *Innovative Startup and Small-Medium Enterprises: a formal definition*

Before delving into the intricacies of the Italian startup landscape and the progression of the Venture Capital industry within Italy, it's essential to lay down a clear definition of what constitutes innovative startups and innovative Small-Medium Enterprises (SMEs), as outlined by regulatory authorities.

The Italian Startup Act, established through Decree-Law on 18 October 2012, n. 179, was designed to establish a comprehensive strategy aimed at nurturing the formation and growth of new innovative ventures with significant technological value. Upon its initial implementation, DL n. 179/2012 marked a paradigm shift for Italy and other OECD (Organization for Economic Co-operation and Development) member states concerning innovative startups.

The definition of an innovative startup is articulated in Article 25 of DL n. 179/2012. Firstly, for a company to qualify as an innovative startup, it must be a limited liability entity whose shares are not listed on a regulated market or in a multilateral trading system.

Furthermore, the company must oof the following requisites (article 25, paragraph 2):

a) The majority of the shareholders must be of physical persons at the moment of the foundation of the company and for the following 24 months.
b) It has been founded or has been operative for less than 48 months (now 5 years after the promulgation of the "Investment Compact" Decree-Law n. 3/2015).
c) It has its headquarters in Italy or at least one operative branch in the Italian territory.
d) Starting from the second year of activity of the innovative startup, the total annual production value, as shown in the last approved financial statements within six months after the end of the fiscal year, is not more than €5 million.
e) It does not distribute, and it has not distributed, profits.
f) It has, as its corporate purpose (exclusive or predominant), the development, production, and marketing of innovative products or services with high technological value.
g) It was not formed by a corporate merger, demerger, or as a result of the sale of a company or business unit.
h) It possesses at least one of the following requisites:
    1. R&D expenses are equal to or greater than 15 percent of the greater cost and total al value of the innovative startup's output.
    2. Employment as employees or collaborators in any capacity, in a percentage equal to or greater than one-third of the total workforce of personnel who hold a Ph.D. degree or who are pursuing a Ph.D. degree at an Italian or foreign university, or who hold a bachelor's degree and who have been engaged, for at least three years, in certified research activities at public or private research institutions, in Italy or abroad.
    3. It is the owner or depositary or licensee of at least one industrial patent relating to an industrial, biotechnological, semiconductor product topography or new plant variety invention directly related to the corporate purpose and business activity.

Additionally, as outlined in article 25, paragraph 4, of the DL n. 179/2012, an innovative startup meeting the aforementioned criteria may be eligible for designation as innovative startups with a social vocation (SIAVS). Paragraph 4 specifies the following sectors:

a) Valorisation of the cultural heritage
b) Protection of the environment
c) Social and health assistance
d) Social enterprises
e) Education (university and post-university)
f) Research

If the startup succeeds, within the time limits set by law, it may qualify to be categorized as an innovative Small and Medium Enterprise (SME). To streamline the transition process from startup to SME, regulations, as per Decree-Law 25 January 2015, n.3, have established an efficient system allowing companies to access relevant benefits seamlessly. Should a company no longer meet the startup criteria outlined above, it can directly request removal from the special section of the Commercial Register and simultaneously apply for inclusion in the special section for innovative SMEs. Given the scope of this study, it is crucial to provide a formal definition of innovative SMEs, as defined by Decree-Law 25 January 2015, n. 3.

The first requirement for classification in this category is quantitative. According to EU Recommendation 2003/361/EC, an SME must meet the following criteria:

a. It employs less than 250 employers or collaborators
b. Its annual revenues are less than €50 million
c. Its total assets on the balance sheet amount to less than €43 million

Similarly to innovative startups, innovative SMEs must also meet specific criteria to be classified in this category, including having their headquarters in Italy or at least one branch in the Italian territory.

Additionally, a company must demonstrate at least two of the following three requirements of innovativeness:

1. R&D expenses are equal to or greater than 3 percent of the greater cost and the total value of the innovative startup's output
2. It employs highly qualified staff (1/5 PhDs, Ph.D. students or researchers, or 1/3 with a master's degree)

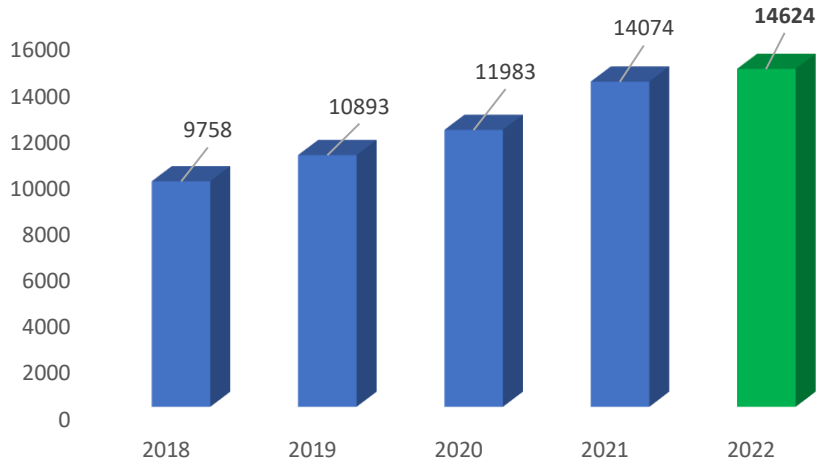
3. It is the owner or depositary or licensee of at least one industrial patent or owner of a registered software

These definitions were crucial for advancing the discussion on the landscape of innovative startups and SMEs in Italy. In the subsequent section, the current regulatory framework for these types of companies will be explained, along with the government incentives enacted over the years to nurture their growth and encourage investments in them. Furthermore, the following section will not only provide a brief overview of the more streamlined economic, bureaucratic, and legal environment for startups but will also outline the tax advantages that established companies would enjoy when investing in innovative startups and SMEs.

2.2 *Italian Startup market*

After outlining the precise definitions of innovative startups and innovative SMEs as outlined in Law No. 221/2012 and Decree-Law No. 3/2015, respectively, this section will delve into their geographic distribution across Italy. The following table illustrates the quantity of innovative startups registered in Italy as of the conclusion of 2022.

Table 1: Number of Italian innovative startups over the period 2018-2022



Source: 2023 Annual report to Parliament

As shown by Table 1, in the five-year period ending in 2022, it can be observed that the growth of the system has been very significant: between 2018 and 2022, the number of innovative startups increased by 46.1%, with a CAGR of 10.64%, from being 9,578 in 2018 to being 14,264 at December 2022. Despite disruptions in global value chains and the significant increase in energy costs due to

shifting geopolitical conditions, the startup ecosystem maintained a positive performance in 2022, also recording a slight increase (+1.4% compared to 2021).

Table 2: Innovative startups' geographical distribution

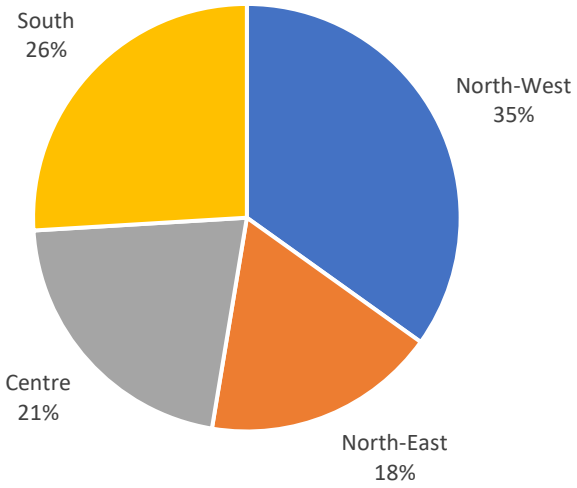
Regional and territorial distribution	2021		2022		Chg. %
	n.	weight %	n.	weight %	2022/2021
Piedmont	767	5.4%	799	5.6%	4.1%
Valle d'Aosta	22	0.2%	16	0.1%	-27.0%
Lombardy	3,766	26.8%	3,941	27.6%	5.2%
Liguria	246	1.7%	219	1.5%	-11.0%
Total North-West	**4,801**	**34.1%**	**4,975**	**34.9%**	**3.6%**
Trentino-Alto Adige	310	2.2%	287	2.0%	-7.4%
Veneto	1,107	7.9%	965	6.8%	-12.8%
Friuli-Venezia-Giulia	246	1.7%	253	1.8%	2.8%
Emilia-Romagna	1,068	7.6%	1,025	7.2%	-4.0%
Total North-East	**2.731**	**19.4%**	**2.530**	**17.7%**	**-7.4%**
Tuscany	650	4.6%	649	4.5%	-0.0%
Umbria	229	1.6%	238	1.7%	3.9%
Marche	396	2.8%	346	2.4%	-12.6%
Lazio	1,708	12.1%	1,824	12.8%	6.8%
Total Centre	**2,983**	**21.1%**	**3,057**	**21,4%**	**2.5%**
Abruzzo	264	1.9%	285	2.0%	7.9%
Molise	81	0.6%	81	0.6%	-
Campania	1,294	9.2%	1,413	9.9%	9.2%
Apulia	639	4.5%	616	4.3%	-3.5%
Basilicata	133	0.9%	135	0.9%	1.5%
Calabria	264	1.9%	256	1.8%	-3.0%
Sicily	671	4.8%	714	5.0%	6.4%
Sardinia	213	1.5%	202	1.4%	-5.1%
Total South	**3,559**	**25.3%**	**3,702**	**26.0%**	**4.0%**
Total Italy	14.074	100%	14.264	100%	3.9%

Source: Infocamere

At the geographical level, approximately 35% of innovative startups are located in Northwestern Italy, with Lombardy leading the pack (27.6% of the national total).

The presence of startups in the South is also significant: more than one in four companies operate in the Southern regions. Specifically, Campania stands out with over 1,400 startups, being the only Southern region to exceed one thousand. It's worth noting the decrease (-7.4%) in startups in the Northeast, although their total number still reaches a considerable figure of 2,500 companies, with Emilia-Romagna leading the way. Furthermore, the basin of startups in Central Italy is also significant - and slightly growing - (with over 3,000 companies), with Lazio leading the group with almost 13% of the national total (see Table 2). From a provincial perspective, Milan tops the list with 2,831 innovative startups in its territory (19.8% of the total), followed by Rome with 1,659 companies (11.6%) and Naples with 715 startups (5%).

Chart 1: 2022 Italian geographical distribution of innovative startups



Source: Infocamere

Regarding the sectors of economic activity, the distribution of companies remains unchanged compared to 2021: more than half of the startups operate within the ATECO section "J - Information and communication services," totalling 7,283 companies (see table 3). Among these, 5,695 are engaged in software production, IT consulting, and related activities. Additionally, there is a presence of approximately 3,290 innovative startups (equal to 23.1% of the total) in the "M - Professional, scientific, and technical activities" section, where over 2,000 startups operate in the field of scientific

research and development. Furthermore, the contribution of manufacturing activities identified by the ATECO code C is noteworthy, with the latter driven by divisions "C 26 - Manufacture of computers and electronics and optical products," "C 27 - Manufacture of electrical equipment and non-electric household appliances," and "C 28 - Manufacture of machinery and equipment n.e.c."

Table 3: Innovative startups divided by sector

ATECO classification	2021		2022		Chg. %
	n.	weight %	n.	weigh %	2022/2021
A - Agriculture, silviculture and fishing	105	0,7%	108	0.8%	2.9%
B - Mining of minerals from quarries and mines	1	0,0%	0	0.0%	-100.0%
C - Manufacturing activities	2,099	14.9%	2,008	14.1%	-4.3%
D - Supply of electricity, gas, steam and air conditioning	115	0.8%	106	0.7%	-7.8%
E - Water supply; sewerage, waste management and sanitation activities	31	0.2%	33	0.2%	6.5%
F - Constructions	134	1.0%	139	1.0%	3.7%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	421	3.0%	422	3.0%	0.0%
H - Transportation and storage	28	0.2%	33	0.2%	17.9%
I - Accommodation and food service activities	66	0.5%	60	0.4%	-9.0%
J - Information and communication services	7,032	50.0%	7,283	51.1%	3.6%
K - Financial and insurance activities	36	0.3%	37	0.3%	2.8%
L - Real estate	27	0.2%	31	0.2%	14.8%
M - Professional, scientific and technical activities	3,257	23.1%	3,290	23.1%	10.1%
N - Rental, travel agencies, business support services	341	2.4%	337	2.4%	-1.2%
P - Education	148	1.1%	144	1.0%	-2.7%
Q - Health and social care	76	0.5%	69	0.5%	-9.2%
R - Arts, sports, entertainment and recreation activities	52	0.4%	56	0.4%	7.7%
S - Other service activities	50	0.4%	48	0.3%	-4.0%
Not specified	55	0.4%	60	0.4%	9.1%
Total of Italy	**14,074**	**100%**	**14,264**	**100%**	**3.9%**

Source: Infocamere

Regarding the legal nature of innovative startups, it emerges that over 9 out of 10 are structured as limited liability companies (see table 4). Furthermore, compared to 2021, they have further increased

both in number (13,325) and in percentage contribution (93.4% of the total). Following are simplified limited liability companies, accounting for 5.1% of the total, and joint-stock companies, representing 0.8% of the total.

Table 4: Innovative startups by legal nature

Legal nature	2021		2022		Chg. %
	n.	weight %	n.	weigh %	2022/2021
Simple limited partnership	0	0.0%	1	0.0%	100.0%
European Economic Interest Group	1	0,0%	1	0,0%	0,0%
Simplified limited liability company	828	8,6%	725	6,8%	-12.4%
Cooperative company	83	1,1%	72	0,8%	-13.2%
European company	2	0,0%	2	0,0%	0.0%
Limited liability consortium	11	0,1%	9	0,1%	-18.2%
Joint-stock company	112	0,8%	110	0,8%	-1.8%
Limited liability company	13,021	89,1%	13,325	91,3%	23.3%
Company established under the law ofanother State	8	0,1%	13	0,1%	62.5%
Limited liability company with sole shareholder	8	0,2%	6	0,1%	-25.0%
Total of Italy	**14,074**	**100%**	**14,624**	**100%**	**3.9%**

Source: Infocamere

Table 5 provides a detailed overview of the situation concerning some specific categories of innovative startups: those led by young entrepreneurs, female entrepreneurs, and those with a majority of foreign stakeholders. It can be observed that the category of innovative startups led by young entrepreneurs has a significant impact on the total, accounting for 17.6%. There has been an increase, compared to 2021, in the proportion of startups with a female majority (13.2%), while the portion of startups with a foreign majority remains small (3.5%).

Table 5: Youth, Female, and Foreign prevalence in innovative startups

Youth prevalence	2021		2022	
	n.	weight %	n.	weigh %
Majority (50%<x<66%)	359	2.6%	402	2.8%
Strong (66%<x<100%)	995	7.1%	1,076	7.5%
Exclusive (100%)	1,115	7.9%	1,031	7.2%
Total	**2,469**	**17.6%**	**2,509**	**17.6%**
Female prevalence	**2021**		**2022**	
	n.	weight %	n.	weigh %
Majority (50%<x<66%)	344	2.4%	349	2.4%
Strong (66%<x<100%)	815	5.8%	915	6.4%
Exclusive (100%)	575	4.1%	624	4.4%
Total	**1,734**	**12.3%**	**1,888**	**13.2%**
Foreign prevalence	**2021**		**2022**	
	n.	weight %	n.	weigh %
Majority (50%<x<66%)	95	0.7%	93	0.7%
Strong (66%<x<100%)	205	1.5%	238	1.7%
Exclusive (100%)	170	1.2%	169	1.2%
Total	**470**	**3.4%**	**500**	**3.5%**

Source: Infocamere

As of October 2, 2023, the number of innovative startups registered in the special section of the Business Register amounted to 13,756, showing a decrease of 3.6% - equivalent to 508 units - compared to December 31, 2022.

From a territorial perspective, the most significant contraction - in absolute terms - occurred in Lombardy (-209 units). Nevertheless, Lombardy remains the leading region in Italy in terms of the number of startups. Another significant reduction was observed in the second region for startup presence, Lazio, where registrations decreased by 101 units compared to the end of 2022. Conversely, there was an increase in startups in Liguria and, generally, in many regions of Southern Italy. Notably, Southern Italy, thanks to the contributions of Campania, Abruzzo, Puglia, Calabria, Sicily, and Molise, was the only territorial division to achieve growth (+2.7%) compared to December 31, 2022.

Regarding the sectors of economic activity, during the first nine months of 2023, there was a decline in manufacturing startups (-115 units), primarily due to contractions in mechanical automation and chemical sectors. This was accompanied by reductions in information and communication services (-

134 units) and professional, scientific, and technical activities (-111 units). In the latter sector, there was a generalized decline affecting almost all sub-sectors, especially scientific research and development (-30 units). At the ATECO section level, financial and insurance activities were the only ones to see an improvement, increasing from 37 startups at the end of 2022 to the current 40 units.

Finally, concerning the legal nature, it is noted that the majority of companies continue to be limited liability companies: as of October 2, 2023, they amounted to 12,881, equivalent to 93.6% of the total nationwide. However, it should be highlighted that, compared to December 31, 2022, they underwent a significant contraction, amounting - in absolute terms - to a loss of 444 units.

2.2.1 *Certified incubators*

According to article 25, paragraph 5 of the D.L. n. 179/2012, a certified incubator is a capital company, also established in cooperative form, residing in Italy, which offers services to support the birth and development of innovative startups and must meet a series of requirements:

a) Have suitable facilities, including real estate, to accommodate innovative startups, such as reserved spaces to install testing, verification, or research equipment.
b) Have equipment suitable for the activities of innovative startups, such as ultrabroadband internet access systems, meeting rooms, machinery for testing, trials, or prototypes.
c) Be managed or directed by individuals with recognized expertise in business and innovation and have a permanent technical and managerial consulting structure available.
d) Have regular collaboration with universities, research centres, public institutions, and financial partners engaged in activities and projects related to innovative startups.
e) Have adequate and proven experience in supporting innovative startups.

Companies meeting these requirements can access certified incubator status through self-certification by the legal representative. They can also enjoy the related benefits by registering in the special section dedicated to the Business Register at the Chambers of Commerce nationwide.

At the end of 2022, there were 57 certified incubators across the country, an increase of 10 units compared to the previous year. In 2022, the territorial distribution of incubators by macro-areas of the country was quite balanced but still with a significant concentration of incubators around the major metropolitan areas of the country.

In the North-West, for example, 28.1% of certified incubators were located, with over half of these situated in Lombardy, making Milan the Italian province with the highest concentration of incubators.

Similarly, the Lazio and Campania regions had 7 and 6 certified incubators respectively, with the cities of Rome and Naples driving regional presence.

It's interesting to note that, compared to the previous survey, the percentage weight of the Northern region has decreased (from 61.7% to 52.7%), although slightly increasing in absolute terms. Conversely, the Southern area of the country has gained representation, hosting nearly a quarter of Italian incubators in 2022 (an increase from 14.9% in 2021).

As of October 2, 2023, the certified incubators registered in the dedicated section of the Business Register were 62, an increase of 5 units (+8.8%) compared to the end of 2022. From a geographical perspective, the increase recorded during the same period is quite evenly distributed across the national territory, with 3 new incubators established in the South, 2 in the Centre, and 1 in the North. All Italian regions, except Molise and Valle d'Aosta, hosted at least one certified incubator in 2023.

Regarding the activities carried out, the sector "M-Professional, scientific, and technical activities" remained the most populous, with 46 companies, accounting for 74.2% of the total. However, compared to 2022, the following changes were observed: a new certified incubator operating in the sector "R-Arts, sports, and entertainment activities"; a new incubator added to the 2 already present in the "P-Education" sector; finally, an incubator classified within the "A-Agriculture, forestry, and fishing" sector.

Regarding the legal nature, it is confirmed that limited liability companies remain the preferred legal form for innovative companies. As of October 2, 2023, there were 38 LLCs (61.3%), an increase compared to December 31, 2022, when there were 34 (59.6% of the total).

2.3 *Regulatory framework and measures in favour of Innovative Startups and SMEs*

Small and Medium Enterprises (SMEs) make up 99.9% of Italy's business landscape, generating over 70% of the country's total industry revenue and employing more than 81% of the workforce (Continolo, 2021).

As previously explained in the definition, with regard to innovativeness, Article 4, paragraph 1, letter "e" of the D.L. n. 3/2015 lists the three alternative criteria based on which an SME can be defined as innovative, namely:

1. It must have incurred expenses in research, development, and innovation amounting to at least 3% of the higher value between turnover and production costs.
2. It must employ highly qualified personnel, meaning that at least 1/5 of the collaborators must be doctoral researchers, doctoral candidates, or researchers, or at least 1/3 must hold a master's degree.
3. It must be the owner, holder, or licensee of at least one patent (related to an industrial invention, biotechnology, a semiconductor product layout, or a new plant variety) or the owner of a software registered with the special public register for computer programs.

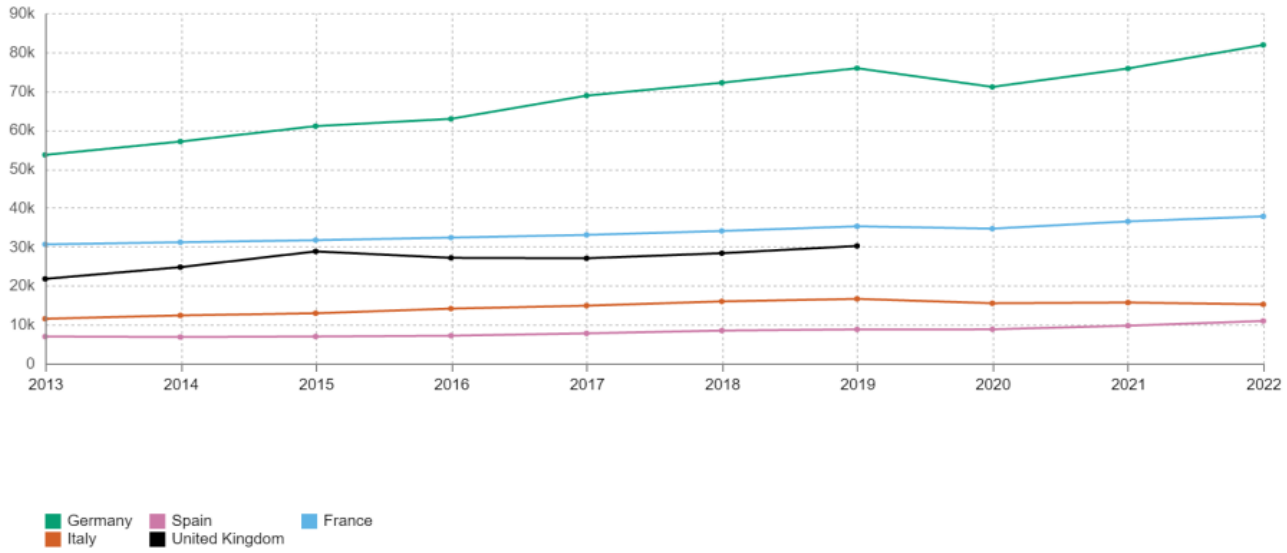
The issue of innovation within SMEs has been identified as critical for Italy's economic stagnation in recent years. While innovation is vital for small ventures, SMEs often face challenges compared to larger enterprises in implementing innovative practices. These challenges include difficulty in identifying relevant technological trends promptly, limited financial capacity for investment, lack of clear strategic vision, and shortages in skilled personnel (Überbacher, 2020). Family-owned businesses, in particular, are driven by long-term goals and often prioritize both financial and non-financial objectives (Überbacher, 2020). Additionally, the continuity of a firm over generations and the transfer of knowledge and experience from one generation to another are essential factors in family-owned businesses (Kotlar & Massis, 2013).

Although SMEs are associated with lower innovation inputs and outputs, their agility and ability to make quick decisions enable them to adapt rapidly to changing environments and shape their innovation strategies accordingly. Moreover, their close ties to the local community and regional networks play a significant role in fostering innovation activities (Überbacher, 2020).

In contrast, larger enterprises have greater access to resources necessary for supporting innovation and can leverage their size to enhance productivity growth associated with innovation. However, SMEs often struggle to sustain the high fixed costs associated with research and development (R&D) programs.

Overall, Italy's high concentration of SMEs has hindered its innovation performance compared to other major European economies, as reflected in Graph 1, which illustrates the disparity in R&D expenditures among European countries such as Germany, Spain, France, and the United Kingdom.

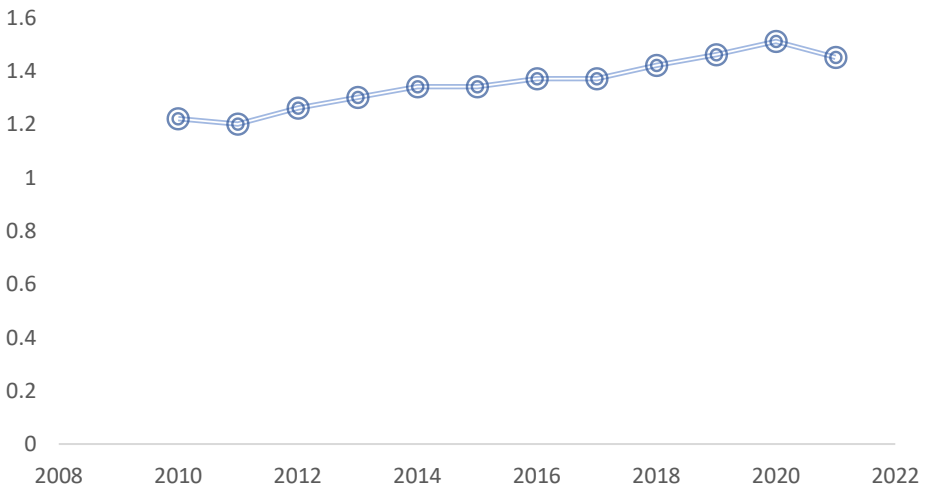
Graph 1: Business Enterprises Expenditure on R&D (BERD) of the European major economies (€k)



Source: Eurostat

It's evident that Italy's spending on research and development (R&D) surpasses only that of Spain among the European countries considered, and its expenditure over the period from 2013 to 2022 falls significantly below the European average. Nevertheless, there's a slight upward trend observed over the years, with expenditures stabilizing from 2019 onward. This pattern is also depicted in Graph 2, illustrating Italy's R&D spending as a percentage of both the total economy and the industrial sector's GDP.

Graph 2: Italian R&D expenditure as a % of GDP

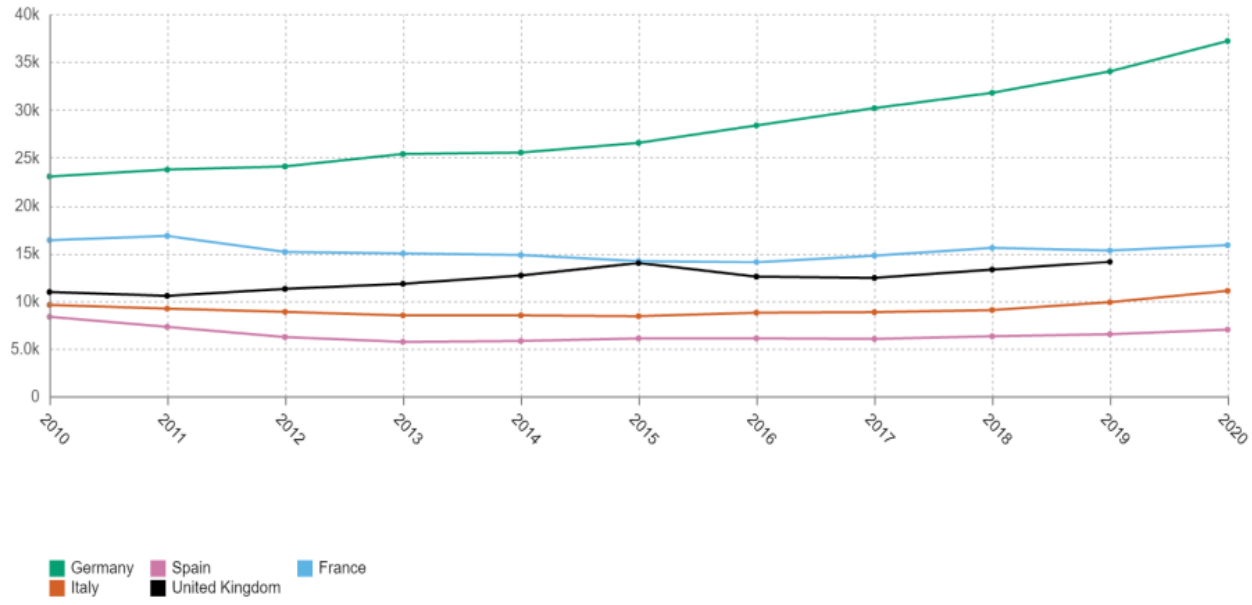


It is crucial to also consider investments made by the industrial sector in innovation. Businesses can explore and exploit (Reinabsch & Hauschild, 2012) innovation both internally and externally. In the context of the latter strategy, this study primarily focuses on venture capital strategy.

From an institutional perspective, fostering innovation throughout the economy via national budget allocations is paramount. In the case of Italy and its economic framework, this argument gains increasing significance due to the imperative for improved monetary allocation across the territory and for technological advancements within the Public Sector.

The following graph 3 illustrates the Government budget allocation for R&D (GBARD) in the major European economies from 2010 to 2020.

Graph 3: "GBARD" in the European major economies – in million €



Source: Eurostat

As can be observed in the graph above, Italy's Government budget allocation for R&D significantly lags behind other expenditures across Europe, with except of Spain.

These unfavourable findings represent just one facet of the numerous factors contributing to Italy's stagnant economic growth over the past two decades. This study focuses solely on the perspective of the innovation process, which has empirically been shown to also encompass a top-down approach, particularly concerning public institutions.

In this context, startups could potentially play a pivotal role in bridging the innovation gap between Italy and other European nations, thereby aiding in overcoming the stagnation in productivity and economic growth rates observed over the past two decades. Consequently, Venture Capital practices may hold substantial potential in fostering the growth of Italian startups and, consequently, sustaining economic growth.

Since 2012, the Italian government has implemented various incentive laws aimed at promoting and stimulating the advancement of startups and investments in them. On October 18th, 2012, the government enacted Decree-Law No. 179, known as "Decreto Crescita 2.0," which was later converted into Law No. 221 on December 12th, 2012. This legislation aimed to create a more streamlined economic, bureaucratic, and legal framework to support the expansion of innovative startups (Torzi, 2018). Subsequent to the enactment of DL No. 129/2012, the Italian government has introduced several laws to facilitate the growth and development of innovative startups and SMEs.

2.3.1 *Decreto crescita 2.0*

In the preceding section of this chapter, we introduced and elucidated Article 25 of Decree-Law No. 179/2012, subsequently converted into Law No. 221/2012, which outlines the formal definition of an innovative startup. Law No. 221/2012, known as “Decreto crescita 2.0”, has implemented various measures aimed at fostering a more flexible legal and bureaucratic framework for startups. For instance, startups are exempt from paying chamber taxes and stamp duties for the first five years following their registration in the Commerce Register, provided they remain registered in the special section. Additionally, Law No. 221/2012 provides exemptions from certain provisions of corporate law. Innovative startups organized as limited companies are granted the following privileges:

a) They can issue preferred stocks, which are shares that may not carry voting rights or have rights disproportionate to the equity stake.
b) They are permitted to conduct operations on their shareholding.
c) They can issue participatory financial instruments.
d) They have the ability to offer equity shares to the public.

The aim of these provisions is to create a conducive environment for startups seeking equity investments from private investors, business angels, venture capitalists, and corporate ventures.

Another exemption from corporate laws outlined in the Civil Code pertains to loss coverage. If operating losses result in a reduction of the company's capital by more than one-third, diverging from

the Civil Code, the deadline for reducing the loss to less than one-third is extended to the second subsequent fiscal year instead of the first, as stipulated in Articles 2446 or 2482bis of the Civil Code.

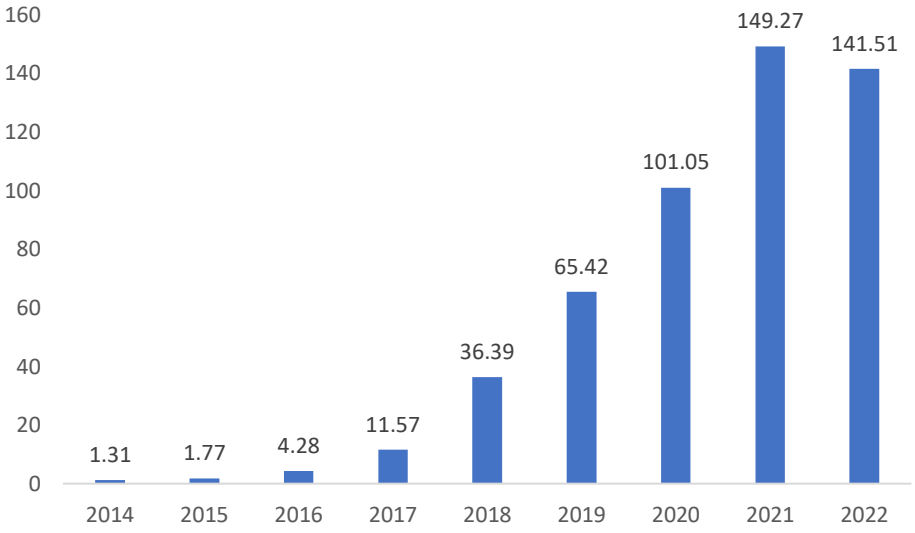
In 2013, Italy regulated the equity crowdfunding market by establishing a special register of authorized online portals. Initially targeting innovative startups, equity crowdfunding gradually expanded to include innovative SMEs, UCIs, and corporations primarily investing in startups and innovative SMEs (2015). Subsequently, with the 2017 Budget Law, equity crowdfunding was opened up to all Italian small and medium-sized enterprises. Consob, the Financial Markets Supervisory Authority, oversees this instrument.

As of December 31, 2022, there were 49 portals registered in the managers' register maintained by CONSOB, all authorized by the Commission and listed within the "ordinary section." The number decreased compared to the 52 platforms listed in 2021 due to three withdrawals recorded amid the halt on new authorizations. The platforms that have published at least one project totalled 42 in all.

As of December 31, 2022, the number of platforms authorized by CONSOB for debt securities placement had increased, although still limited, with eight platforms compared to three in 2021, although only three platforms actually placed debt securities. Additionally, the number of platforms authorized for opening bulletin boards for the sale of shares increased to seven from two in 2021.

The capital raised for campaigns officially concluded as of 31st December 2022 amounted to €141.51 million, marking a decrease (-5.2%) compared to the record value of €149.27 million recorded for 2021. As of 31 December 2022, the total capital raised through equity crowdfunding since the portals' operations began stood at €512.56 million, as can be seen from Chart 2.

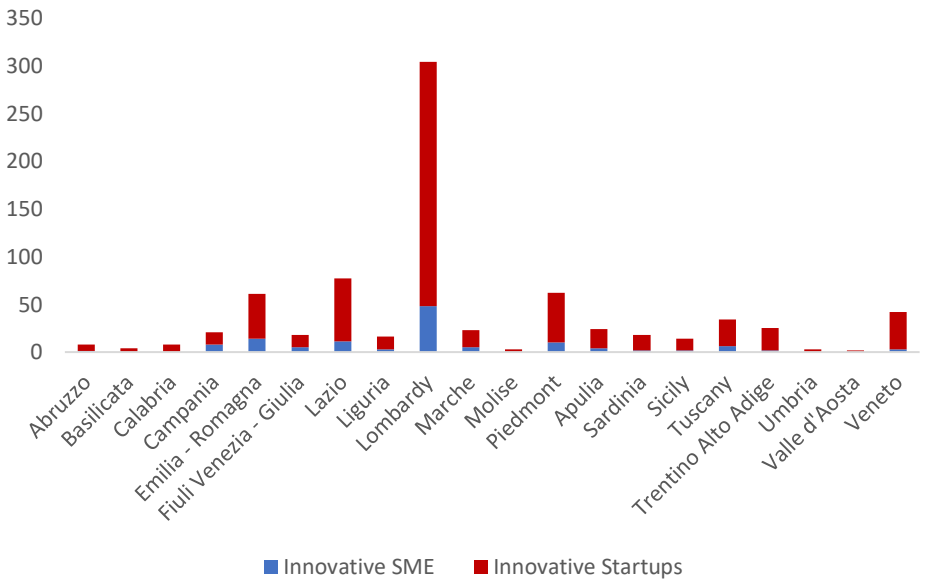
Chart 2: Funds raised through equity crowdfunding campaigns in Italy - Capital raised in million €



Source: Crowdinvesting observatory, Politecnico di Milano

Chart 3 depicts the territorial distribution of businesses, with Lombardy firmly in the lead with 256 innovative startups and 48 innovative SMEs, followed by Lazio (66 and 11 respectively) and Piedmont (52 and 10). The concentration in urban areas is significant: 185 innovative startups and 41 innovative SMEs are concentrated in the metropolitan city of Milan. The capital, Rome, counts 59 and 10 respectively. Emilia-Romagna, on the other hand, is the region with the highest number of special purpose vehicles (36) created "ad hoc" for each project.

Chart 3: Distribution of innovative startup and innovative SME issuers by location.



Source: Crowdinvesting Observatory, Politecnico di Milano

2.3.2 *Guarantee Fund for SME*

One year after the *Decreto Crescita*, through the enactment of Decree-Law No. 147/2013, the regulatory body extended access to the guarantee fund for SMEs to include innovative startups. Since September 2013, these startups have had the opportunity to secure a bank credit guarantee from the SME Guarantee Fund managed by Mediocredito Centrale, covering up to 80 percent of each transaction, with a maximum limit of €2.5 million. This guarantee is provided in the following manner:

a) Automatic: The Fund does not conduct a thorough examination of the startup's financial data, relying instead on the due diligence performed by the lending institution overseeing the transaction.
b) Expedited: Applications from innovative startups or certified incubators are processed more rapidly than standard ones.
c) Free: There are no associated costs for accessing the Fund.

Moreover, the Decree-Law "Liquidity," converted into Law No. 40 on June 5, 2020, was introduced as a response to the Covid-19 pandemic crisis, aiming to further bolster support for companies' credit access. It introduced modifications to the Fund's regular operations, increasing the coverage from 80 percent to 90 percent and raising the maximum guaranteed amount from €2.5 million to €5 million.

From 2013 to the fourth quarter of 2022, the Fund managed a total of 16,610 operations. The overall amount of potentially mobilized financing exceeds €3 billion. The operations authorized by the Fund towards innovative startups and effectively resulting in the granting of financing amount to a total of 14,480, for over €2.5 billion disbursed and over €2 billion guaranteed. The innovative startups benefiting from the Guarantee Fund are 7,123; among them, some have received more than one loan (which is why the total number of operations resulting in the granting of financing is significantly higher). Overall, the average amount for each disbursed operation is €173,17. Meanwhile, the average duration of the financing is 61.4 months.

2.3.3 *Tax incentive in "de minimis" for investments in innovative Startups and SMEs*

Starting from January 1, 2017, a significant tax incentive has been introduced for investors in innovative startups. This incentive, contingent upon maintaining the investment for a minimum of three years, is structured as follows:

a) For individuals, there is a deduction from the gross IRPEF tax amounting to 30 percent of the invested sum (increased to 50 percent since the enactment of DL n. 34/2020), capped at €1 million.
b) For legal entities, there is a deduction from the IRES taxable income equivalent to 30 percent of the invested amount, up to a maximum of €1.8 million.

These measures aim to encourage the expansion of innovative startups and SMEs by offering tax advantages to equity investors. The second set of rules specifically allocates more resources to startups and to entities that play a significant role in Italy's innovative startup ecosystem, such as incubators, accelerators, and venture capital funds.

Moreover, for investments made in innovative startups, the maximum eligible amount is €100,000 per tax period. For investments made in innovative SMEs, the maximum eligible amount is €300,000 per tax period (beyond this limit, on the excess part, the investor can deduct 30% in each tax period, always within the "de minimis" ceiling of the beneficiary company).

According to the "de minimis" Regulation, the innovative startup or innovative SME receiving the investment cannot obtain public aid exceeding €200,000 over three financial years.

As of December 6th 2023, the total number of investment operations amounted to 19,313 units, with a total investment amount exceeding €290 million and tax incentives granted for over €146 million.

Table 6 Investments in "de minimis" for innovative startups and innovative SMEs

As of December 6th 2023	Number of operations	Investments' amount	Tax incentives granted
Innovative Startups	16,305	243,846,616.2 €	121,959,739 €
Innovative SME	3,008	9,075,372.9 €	4,537,686.2 €
Total	19,313	292,921,989.0 €	146,497,425.8 €

Source: Invitalia

Compared to the last survey conducted in mid-November 2022, the number of operations has increased by about 3,300 units, while the total amount of investments has grown by almost €37 million, along with an increase of about €29 million in granted tax deductions.

Regarding the type of investment, there is a clear prevalence of direct investments over indirect ones made through Collective Investment Schemes “OICR”, which predominantly invest in innovative startups or SMEs. This predominance is evidenced by only 43 indirect investments compared to 19,270 direct investments. The investment operations mainly involve companies operating in the "production of non-edition-related software" (5,907 operations for over €92 million in investments and approximately €46 million in incentives), "web portals" (1,833 operations for about €21 million in investments and over €10 million in incentives), and "experimental research and development in the field of other natural sciences and engineering" (1,216 operations for €24.5 million in investments and €12 million in available deductions).

2.3.4 *National fund for innovation*

The National Innovation Fund (FNI or CDP Venture Capital SGR) was established in 2020 (Budget Law 2019) with the aim of promoting, through a systemic approach in the management of public and private resources, the creation of a market operator capable of contributing to supporting the development of venture capital to unlock the largely untapped innovation potential of Italy, giving impetus to the various entities that foster economic growth.

With a total endowment of approximately €2.0 billion as of December 31, 2022, CDP Venture Capital SGR is an entity owned 70% by CDP Equity and 30% by Invitalia. It operates by investing directly and indirectly in startups, innovative SMEs, and venture capital funds, covering the entire lifecycle of startups with the aim of promoting the development of innovation players to make venture capital a cornerstone of economic development and innovation in Italy. Investments are made by the individual funds of CDP Venture Capital SGR selectively with the aim of maximizing returns for investors and generating impact on the national economy.

CDP Venture Capital SGR operates on four main directions identified as strategic to fill the gaps in the current venture capital ecosystem and enable further investments to accelerate growth in Italy through:

- The creation of a new technology transfer infrastructure to support the industrialization of scientific research to generate new patents and innovative companies from the excellences present in universities and research centres;
- The development of a new infrastructure of acceleration programs for the growth of startups in the early stages of their journey, which boasts a range of operational programs in high-

growth market sectors, involving an entire ecosystem of partners including banking foundations, institutions, companies, and venture capital operators;

- The development of a financial infrastructure of venture capital funds with resources and expertise to support the growth of Italian startups and SMEs through indirect investment activities in a fund-of-funds logic;
- Direct investments in startups and innovative SMEs in various stages of life and in strategic sectors for the country to ensure sufficient access to capital.

As of 2022, the activities were articulated through 10 Funds, the most relevant of which are:

1. Italy Venture Fund I: Since 2015, with an endowment of €80 million, it invests in the best startups and innovative SMEs in Italy, together with national and international private actors;
2. Italy Venture Fund II - Southern Enterprises Fund: Since 2019, with an endowment of €150 million, it accelerates the competitiveness and development of startups and innovative SMEs in the South and invests in all phases of a company's lifecycle;
3. FOF Venturitaly: Since 2020, with an endowment of €465 million, it invests in venture capital funds active throughout the industry chain, with the aim of generating returns for investors and developing the venture capital market in Italy;
4. Accelerator Fund: Since 2020, with an endowment of €213 million, for the development of a network of next-generation vertical accelerators in partnership with Italian and international operators, SMEs, and corporations, to finance the best startups in the acceleration process and in subsequent rounds;
5. Boost Innovation Fund: Since 2020, with an endowment of €50 million, aimed at supporting Italian corporations in the initiation and funding of startups with a strong innovative impact for their own business and for the development of the markets in which they operate or are preparing to enter.

Chart 4: Main Sector Direct Investments

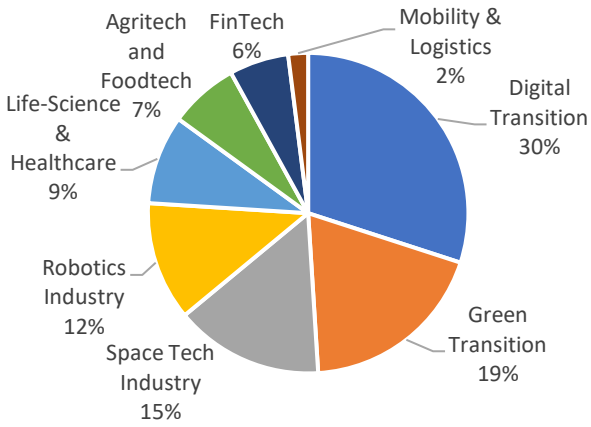
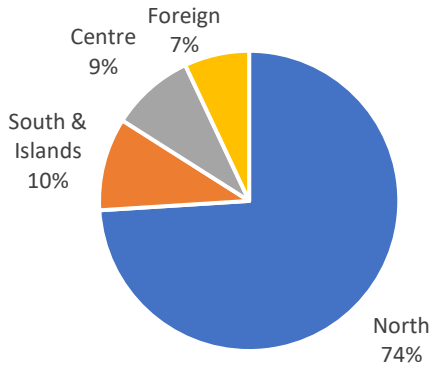


Chart 5: Geographical distribution direct investments



Source: CDP VC SGR Overview of 2022 Investment activity

Moreover, at the end of 2021, CDP SGR had invested €705 million, split in €414 million of "Indirect investments in VC funds", €131 million of "Direct investments in Early and Growth Stage phases", €94 million of "Indirect investments in pre-seed and seed phases" and €66 million of "Automatic Matching Co-Investments" (resources disbursed to sustain startups impacted by the pandemic). During 2022, CDP Sgr disbursed other €130 million in Indirect investment in VC funds, €112 million in Direct investments in Early and Growth Stage phases, €42 million in Indirect investments in pre-seed and seed phases, concluding with €57 million in Automatic Matching Co-investments.

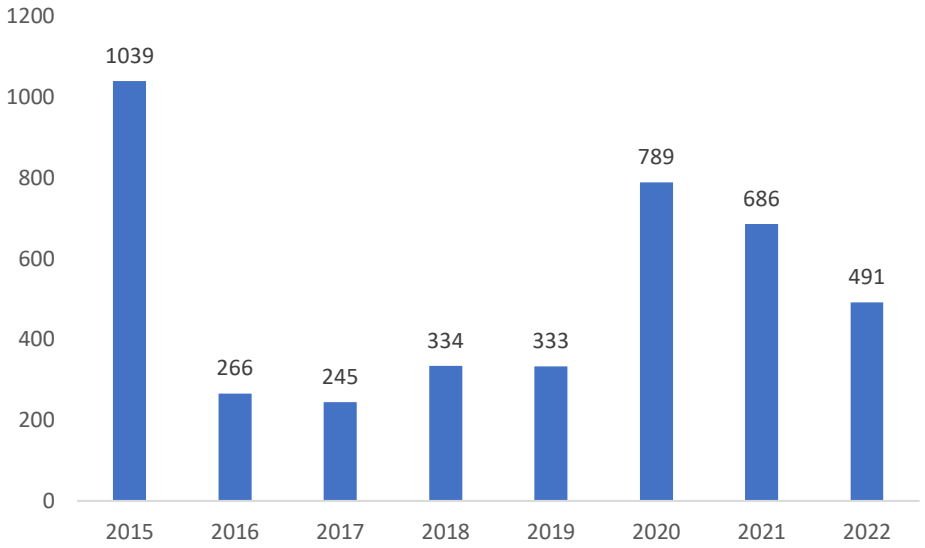
2.3.5 *SMART&START Program*

Established by decree-law on September 24, 2014, Smart&Start Italia is a subsidized financing tool managed by Invitalia aimed at innovative startups located throughout the national territory. It provides zero-interest financing to innovative startups covering investment projects ranging from €100,000 to €1.5 million, which covers up to 80% of the expenses incurred by the startup, with an increase to 90% for companies with a majority of female or young ownership. Additionally, innovative startups based in Southern Italy regions benefit from a grant component equal to 30% of the total disbursed amount.

From January 20, 2020 (the opening date of the new desk) to December 31, 2022, the Agency received 1,966 funding applications, amounting to approximately €1,715.9 million in requested expenses, of

which subsidies amounted to approximately €1,400.7 million. Below is the trend of applications submitted from 2015 to 2022.

Chart 6: SMART&START applications submitted



Source: Invitalia

20% of the initiatives presented are based in Lombardy, 13% in Campania, 9% in Lazio, followed by Abruzzo, Puglia, and Sicily at 7%, and Emilia-Romagna and Veneto at 6% each. The total number of involved proposers is 14,186, with over 30% being young (under 36). Women involved constitute approximately 19% of the total proposers. Both men and women are predominantly in the age group of 36-50 years, accounting for 42% of men and 45% of women, respectively. Overall, 23% of funding applications were approved, with the highest approval rates in Liguria (31%) and the lowest in Valle d'Aosta (11%).

Overall, in the years 2015-2021, 979 innovative startups have obtained financing, enabling them to activate investment plans in the following three areas:

- High-tech initiatives: 259 startups with an approved amount of over €139.3 million.
- Digital economy: 496 startups with an approved amount of over €220 million.
- Research valorisation: 224 startups with an approved amount of over €119.5 million.

As of December 31, 2022, 846 financing contracts have been signed (122 in the last 12 months), and 180 startups have been revoked or have renounced the incentives after signing the contract.

Moreover, in 2022, with a Decree issued by the Minister of Economic Development on February 24th, an additional update to the support intervention for the birth and development of innovative startups was introduced, dedicated to converting part of the debt. Specifically, innovative startups already benefiting from the "Smart&Start ITALIA" incentives can request to convert a portion of the loan into non-repayable funding (up to 50%) if the company makes investments in risk capital in the form of equity investment or conversion into equity of a quasi-equity instrument by third-party investors or individual shareholders.

The intervention aims to support the strengthening of startups' equity and the related reduction of debt; ensure greater guarantees on the repayment (even partial) of the debt, supporting companies also in the phase of further expansion; attract private investors; ensure greater complementarity of the Smart&Start tool with other public interventions aimed at incentivizing private investments in the risk capital of innovative startups.

As of February 2024, 1,540 innovative startups have been financed by Smart&Start, with over €800 million of investments activated and €618 million of granted subsidies.

2.3.6 *Smart Money Program*

Established by Ministerial Decree on September 18, 2020, Smart Money has been a subsidized financing tool managed by Invitalia (the National Agency for Attraction of Investments and Business Development) to support innovative startups in the pre-seed and seed phases in the implementation of development projects, facilitating their interaction with incubators, accelerators, innovation hubs, research organizations, and other authorized entities.

The Smart Money measure included two lines of intervention:

- CHAPTER II concerns the granting of a non-repayable contribution, up to a maximum of €10,000, for expenses related to the implementation of an activity plan carried out in collaboration with an actor in the innovation ecosystem;
- CHAPTER III provides additional support in the form of a non-repayable contribution, up to an overall limit of €30,000, for the entry of actors in the innovation ecosystem into the risk capital of innovative startups already benefiting from support for the activity plans under the previous intervention line.

Decree Law No. 34 of May 19, 2020, the "Relaunch Decree," Article 38, paragraph 2, provided for the granting of subsidies in the form of non-repayable contributions aimed at acquiring services provided by incubators, accelerators, innovation hubs, business angels, and other public or private entities operating for the development of innovative enterprises.

As previously indicated, the Smart Money Measure was characterized by two lines of intervention, namely Chapter II and Chapter III. Only innovative startups admitted and who have completed the reporting of the development project submitted with Chapter II could have had access the benefits of Chapter III.

With regard to Chapter II, the call had been opened on June 24, 2021, and closed on August 3, 2021, due to exhaustion of funds.

The instrument has generated significant interest from potential entrepreneurs of innovative initiatives: in just over a month, the Agency received a total of 758 requests for support, of which 30% concern established companies and 70% concern non-established companies.

2.4 *Italian venture capital market*

Italian venture capital is gradually assuming increasingly significant dimensions. There still exists a stage of development that is not entirely satisfactory compared to other countries that are significantly comparable to us, but the recent years have certainly been marked by a reduction in the gap that characterized our system. It is worth noting, however, that after two consecutive years marked by a doubling of the amount invested, the slowdown in growth in 2023 is in line with a global slowdown in the venture capital market, which had already partly manifested itself in the second half of 2022. Moreover, even in this year of difficulty, it is relevant to highlight that the overcoming of the "psychological" threshold of one billion euros in total rounds at the industry level (overall activity carried out by formal and informal operators, such as business angels) has been consolidated.

It appears, therefore, strategic at the national level to set the goal of a common commitment aimed at the development of this area of the financial market, in order to provide emerging or early-stage companies with a valuable opportunity to support the initial phases of their lifecycle. However, numerous studies conducted in both academic and professional spheres on the sector in question, both nationally and internationally, have highlighted an important implication in terms of industrial policy direction: the development of venture capital cannot be envisaged without considering the harmonious development of the financial system as a whole. This type of activity is inherently pro-

cyclical, meaning it can act as an "accelerator" of economic development. However, if it is to be strengthened in favour of more complex businesses and during less favourable economic cycles (and thus act as a true "engine" of development), it requires continuous, articulated, and coherent support, rather than merely occasional interventions. All of this is aimed at maintaining constant levels and cycles of investment.

What has just been stated is particularly true with regard to interventions in high-tech companies, where, if action is not taken at all levels of the supply chain that generates investment opportunities, starting from basic research, very few lasting and significant effects on the country's system are produced.

In this regard, the primary objectives to pursue for the rapid enhancement of this segment of the financial market are those aimed at addressing the gaps or weaknesses in our market, consistent with what has already been partially initiated in recent years.

Firstly, it is important to continue implementing an increasingly structured offering, primarily achieved through the increase in the number of domestic venture capital fund managers—a crucial condition to create a true "system" at the national level. Despite growth in recent years, there are currently about 40 such managers, compared to an average of around 150 in the major European countries. Closely related to this aspect is the issue of the size of funds managed by Italian venture capitalists, which is generally smaller than those of foreign managers.

Furthermore, delving into more detail, there is often an excessively low average investment ticket for seed investments, as well as a limited presence of operators specializing in later-stage investments (interventions aimed at scaleups, usually exceeding five million euros). Regarding this latter aspect, it is worth noting that some domestic managers are launching initiatives of larger scale than in the past, capable of covering not only the early stage but also the later stage.

Lastly, in addition to the aforementioned points, there remains a significant difficulty in raising capital from institutional investors, a relatively undeveloped corporate venture capital activity—broadly speaking, the role of corporations in supporting innovation could be crucial for market development, also in terms of M&A activities, facilitating the exit phase of venture capital funds—a persistent challenge in the disinvestment phase, and, more generally, an excessively fragmented ecosystem. However, it is undeniable that the market has experienced significant development in recent years, indicative of a clear improvement in this ecosystem.

It is worth considering, above all and as said previously, the intensive activity carried out since its inception to date by CDP Venture Capital SGR, which aims to make venture capital a cornerstone of

the country's economic development and innovation, fostering a structured and organic growth of the underlying ecosystem. This activity has unfolded in a comprehensive manner, encompassing both direct and indirect investments, as well as system initiatives:

- 13 direct and indirect funds have been established, giving rise to new funds and investment teams;
- the creation of additional acceleration programs, totalling 18 networks, and technology transfer hubs, currently numbering 5;
- constant involvement of corporate entities;
- the launch of funds dedicated to later-stage investments and digital and green transition;
- the attraction of international venture capital funds with the first indirect investments from the international FoF.

It thus plays a decisively pivotal role in our ecosystem.

2.4.1 *Snapshot of the Early-Stage Ecosystem in Italy*

Premise: This section exclusively considers "initial" investments made by institutional investors in private equity capital and other active market operators (Business Angels, angel investing operators, seed capital funds, accelerators, and corporate entities) classified as early-stage operations (seed capital and startup). For better understanding and market analysis, later stage venture operations have also been classified and mapped. Therefore, all investments made by institutional investors of any nature and legal form targeting operations in the phases subsequent to startup (expansion, buy-out, replacement, and turnaround) have been excluded from this survey.

In 2023, the VeM Observatory and IBAN collectively monitored an aggregate of 405 investments, a decrease compared to the 445 transactions in 2022 (417 in 2021). This result was achieved with 373 investments in startups based in Italy and 32 in foreign startups promoted by Italian founders (compared to 421 and 24 respectively in 2022). In particular, regarding Italian startups, the segment related to deals exclusively carried out by venture capital operators (including seed investors and corporate operators investing directly or through dedicated vehicles) recorded 200 investments, while those involving syndicated operations between these operators and Business Angels counted 102, and those solely attributable to deals conducted by Business Angels registered 71. Looking at foreign startups with Italian founders, there were 13 investments made solely by venture capitalists, 15 in

syndicate, and 4 by Business Angels alone. In terms of the total investment amount in the early-stage market, the overall value stands at just over €1.4 billion (it was over €2.2 billion in 2022). This result consists of approximately €1.1 billion invested in Italian startups and just over €300 million directed to foreign startups with Italian roots (compared to over €1.9 billion and €306 million respectively in 2022).

Specifically focusing on Italian startups, €559 million are attributable to venture capital investors, €526 million to formal investors in collaboration with Business Angels (VC&BA), while Business Angels operating without cooperation with funds made investments of €34 million. The analysis of foreign startups, on the other hand, highlights €200 million invested by venture capitalists alone, 113 in syndicate, and 5 by sole informal investors.

Table 7: 2022-2023 Comparison

	Italian Startups		Foreign Startups with Italian founders		Total	
	2022	**2023**	**2022**	**2023**	**2022**	**2023**
Only VC	205	200	12	13	217	213
Syndicated (VC &BA)	144	102	9	15	153	117
Only BA	72	71	3	4	75	75
Total operations (initial and follow on)	**421**	**373**	**24**	**32**	**445**	**405**
Only VC - € mln	371	559	254	200	625	759
Syndicated (VC &BA) - € mln	1,492	526	48	113	1,540	639
Only BA - € mln	79	34	4	5	83	39
Total investment amount (initial and follow on) - € mln	**1,942**	**1,119**	**306**	**318**	**2,248**	**1,437**

Source: Venture Capital Monitor Report 2023

In 2023 there was a setback in the development of the Italian venture capital market, following the trend that began to emerge internationally in the second half of 2022. The decline primarily affected the invested amount: from nearly €2.2 billion in total, it dropped to €1.4 billion. Specifically, 2023 concludes with a decrease in investments in startups based in Italy, which decreased from almost €1.9 billion in 2022 to around €1.1 billion, slightly surpassing the level of 2021, with approximately €300 million invested in foreign entities promoted by Italian founders, exactly as in the previous year.

These results were almost exclusively determined by the lack of true mega deals, which had characterized the previous year, with two rounds of €300 million each.

In terms of the number of rounds, however, the slowdown is less pronounced (-11%), mainly affecting initial investments (273), which did not exceed 300 as in 2022. In this regard, we essentially return to the 2021 figure (285), but still well above what was recorded up to 2020 (200 initial), a turning point year for our market. Possible reasons for this slowdown include the extended time to close deals, which characterized the entire year.

Nevertheless, among the positive aspects, we cannot overlook the continued collaboration between private and institutional/public operators, the emergence of new domestic managers and funds, as well as the attention from international players towards Italian market. Additionally, corporate participation in investments, both through corporate venture capital structures and in a less articulated manner, and the flow of innovative initiatives from an increasingly active network of vertical accelerators and technology transfer hubs, coordinated under the guidance of CDP Venture Capital SGR, are noteworthy.
Looking specifically at initiatives originating from scientific research, another positive aspect emerges: significant increases in capital are beginning to be monitored in targets originating from this field, even with leading international lead investors.

Furthermore, the influx of resources from the private banking channel and the use of "ELTIF" (European Long-Term Investment Fund), which help channel private resources towards venture capital investments, continue. Moreover, some operators, following successful initial capital rounds, have focused part of their activity on second and third investment rounds (so-called follow-on operations). This category, in particular, approaches the 2022 figure this year, reaching almost 60 deals (compared to 32 in 2021), indicating the ongoing support of investors to rapidly grow some companies that have proved successful and are continuing their development at a fast pace.

From this evidence and the fact that there is interest from international funds with significant firepower, we believe that 2023 has also laid the groundwork for future mega deals. Mega deals that, as mentioned earlier, were not realized in the year: with reference to Italian startups, in particular, there is a single later-stage round that records €100 million received by Bending Spoons, the trending Italian startup which produces and markets mobile apps, followed by a funding round (in two rounds) of approximately 80 million for a startup operating in the aerospace sector. This consideration is

crucial to explain the decrease in the invested amount in domestic entities, which, however, suffered less numerically; while those conducted by Italian-founded foreign companies remained at the same level as in 2022, still far from the record result of the previous year.

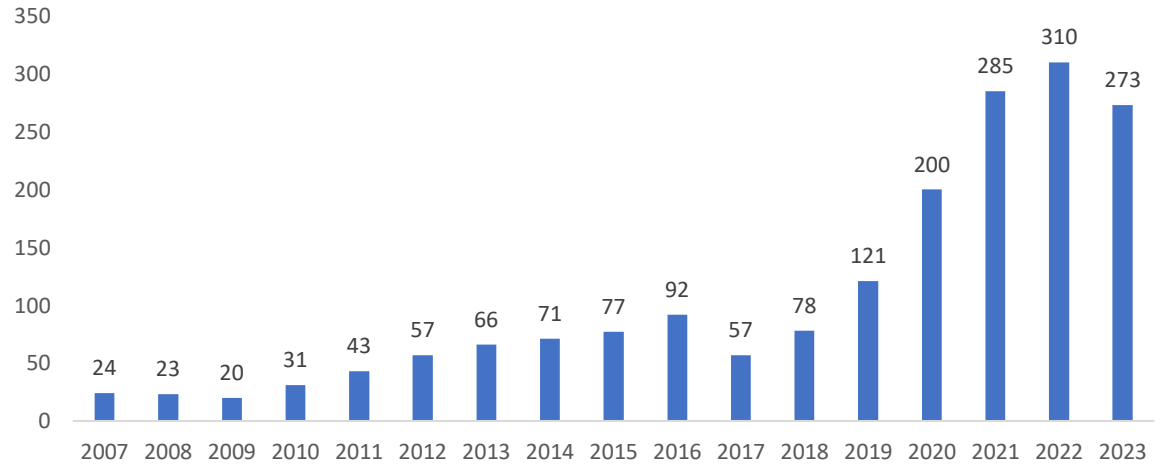
Turning to a sectoral analysis, given the traditional top position of ICT and the usual interest in Life Sciences, Fintech remains in the top positions. A novelty this year concerns a good flow of investments towards Edutech, falling within the cluster of "other services." Therefore, 2023 represents a step back in terms of the invested amount, but as mentioned, this variable depends greatly on the presence (or absence) of significant-sized deals. From this perspective, Italian market has not yet achieved the consistency of more developed ones, but improvement can be expected in the coming years. However, to resume the pursuit of more advanced markets, intense collaboration between the public and private sectors is indispensable, fundamental for rapid yet sustainable growth. Another factor to consider that could accelerate market development is the digital and green transitions and the related resources available (within the scope of the PNRR), which could drive investments in innovation and ensure that our country plays a leading role. On the other hand, as already highlighted, the continued emergence of new operators and funds and the increasing participation of corporates will also allow progress towards the primary goal of an advanced venture capital ecosystem, to become one of the mainstays of the country's growth.

Returning to this last consideration, it is important to remember the challenges that historically characterize the domestic market: on the one hand, the need to approach the numerical and size dimensions of venture capital funds present in markets such as France, Germany, and the United Kingdom, also supporting - as is already being done - the establishment of "first-time fund and team," as well as the launch of new generations of management vehicles already present on the market; here, a crucial role, along with the public actor, can be played by institutional investors. On the other hand, while highlighting some very positive steps forward, it is important to continue towards greater valorisation of the contribution from Universities and Research Centres, in continuity with what has already begun with ITAtech and the new initiative promoted by EIF and CDP Venture Capital SGR in 2021. Here, borrowing best practices and successful models from abroad, it is even more necessary for all stakeholders, both public and private, to continue working side by side to bring to the market the benefits originating from scientific research.
In conclusion, it is hoped that the various stakeholders will interact and work virtuously towards a common goal: the growth of the industrial system, in a sustainable perspective, to which a significant contribution can certainly be offered by venture capital.

2.4.2 *The Market, Players and main evidences*

In 2023, there were 273 new operations, a decrease of 12% from 2022 (310 initial, compared to 285 in 2021), breaking the growth trend of previous years. This trend is analysed and explained in more detail before this section. The number of active investors (both Lead and Co-Investor) stands at 303 (excluding Business Angels/private investors who invest individually and not through clubs, vehicles, or similar structures), consistent with 2022 (which had 308), for the closing of 622 single investments (591 in 2022). Investors thus made an average of 2.1 single investments each, a slight increase from the previous year (1.9). Analysing market concentration, excluding Business Angels who invest personally, the top 10 operators carried out 28% of the activity, down from approximately 34% the previous year.

Chart 7: 2007- 2023 New operations distribution for investment year



Source: Venture Capital Monitor Report 2023

Regarding the origin of active operators, 28% of single investments were made by foreign investors, slightly above last year's figure (24%; it was 14% in 2020), demonstrating good interest from these subjects towards the Italian market. Risk diversification was slightly higher than in 2022 (59%). 60% of operations were conducted in syndication, meaning involving multiple entities of the same or different nature. Business Angels/private investors (also through Equity Crowdfunding platforms) participated in a total of 102 operations (130 the previous year), confirming a good level of cooperation between these two categories of actors.

Within the seed capital, startup, and later-stage market, broadly defined as venture capital, there are highly heterogeneous operators ranging from informal (Business Angels, individuals investing personally), to structured angel investing entities, to seed capital funds, up to the "true" venture capital funds promoted by regulated managers. These funds are characterized by a significantly larger fund size and average deal size compared to other active operators. Notably, there is substantial participation from Italian and international corporate entities, which invest directly or through dedicated vehicles, often alongside venture capital funds, but also sometimes leading investment rounds. In this context, 59 operations involving corporate entities were mapped in 2023 (compared to 86 in 2022 and 94 in 2021).

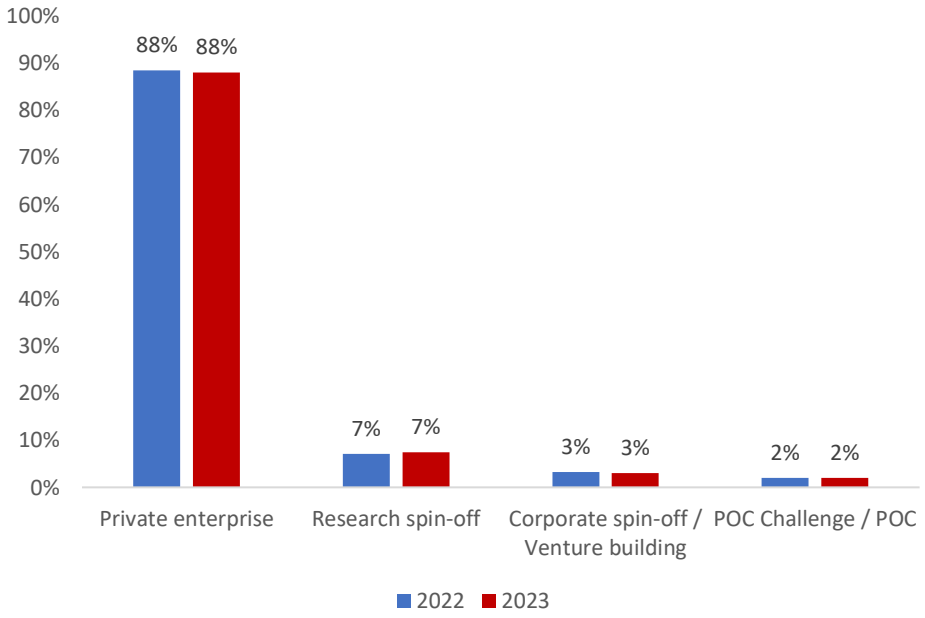
2.4.3 *Type of Operation, Average Amount Invested, and Acquired Share*

As historically recorded in the Italian market, with the sole exception of 2020 when seed investments prevailed, startup capital rounds again took first place in 2023 with a market share of 54% (147 rounds compared to 167 in 2022). The relative figure is identical to that of the previous year and aligns with values monitored in the past (56% in 2021 and 51% in 2019).
Regarding seed capital rounds, two common trends compared to the previous year are observed: in 2023, the number of deals surpassed 100 (compared to 83 in 2021), and there is relative alignment with a share slightly exceeding 40% (compared to 29% in 2021).
Later stage venture operations, on the other hand, continue to play a marginal role in market share, representing 5% of initial operations (7% in 2022). Nevertheless, it is highlighted that the predominant contribution of these operations aimed at supporting the new development phases of the invested companies is substantial in terms of amount.
The data on the average amount invested shows a figure of €4.7 million, down from 6.1 million in 2022 and 7.4 million in 2021. The reason lies in the limited presence of high-value rounds in 2023. Regarding the acquired share, the trend of funds making minority investments continues to consolidate.

In terms of deal origination, since 2019, the category "Proof-of-concept (POC) Challenge"/"POC" has been identified, relating to the financing of projects and ideas that have not yet been incorporated into companies. This need arises from the mapping of pre-seed investments, primarily carried out by technology transfer funds, which, together with rounds aimed at supporting academic and research spin-offs (25 investments, 27 in 2022), account for 9% of the total, the same as in 2022. Entrepreneurial initiatives of a private nature still dominate the market (239), representing 88% of

the market, also unchanged from the previous year (274). There are also 5 corporate spin-off operations, consistent with values from previous years, plus 4 venture building initiatives.

Chart 8: 2002 vs. 2023 Deal Origination distribution



Source: Venture Capital Monitor Report 2023

2.4.4 *Geographical and sectoral distribution of VC Investments*

The geographical distribution of the invested companies in 2023 shows, as has historically been the case, a predominance of Lombardy with 46% of the entire market (44% in 2022), followed by Lazio (13%) and Piedmont (8%).

At the level of geographical areas, the values recorded in 2023 are as follows:

- The North accounts for 68% of the total, slightly down from 69% in 2022;
- The Centre is around 23%, up from 17% in 2022;
- The South and Islands are at 9%, down from 14% in 2022.

In line with the beginning of this paragraph, some specific data particularly attract attention. The first is Lombardy (113 companies invested in compared to 124 in 2022), which confirms its role as an attraction hub, and Lazio (32 targets compared to 37 in 2022; there were 8 in 2019), which together

attract over 58% of the operations. Another notable region is Piedmont, consolidating its position in the top three regions (19 targets compared to 29 in 2022), and Tuscany, which doubled compared to the previous year (17 targets compared to 9 in 2022).

There is also a slight increase in the phenomenon of Italian-origin companies headquartered abroad, with 23 companies invested in (19 in 2022). Among the main foreign countries, the United Kingdom (6) and Germany and Switzerland (both with 4) are noteworthy.

Graph 4: Geographical distribution of VC Investments in Italian Startups

Source: Venture Capital Monitor Report 2023

From a sectoral perspective, the ICT sector largely attracted the interest of venture capital investors, reaching a share of 38%, consistent with 2022 (39%), but still below the values of 2020 and 2019, which stood at 46% and 44% respectively. Within the ICT sector, technologies serving businesses were more prevalent compared to platforms providing consumer services. Beyond this traditional concentration in the ICT sector, Healthcare returned to second place this year, a sector that has historically attracted venture capital funds, followed by the "Other services" sector, driven by edutech. Financial Services (fintech) and Energy and Environment followed closely. Specifically, as noted, Healthcare remains the second sector of interest, with 12% (8% in 2022), followed by other services

with 9% (7% in 2022), and Financial Services and Energy and Environment each with 7% (10% and 8% respectively in the previous year).

2.4.5 *Follow on investments*

To provide a more comprehensive representation of the market, it is necessary to conduct a dedicated in-depth analysis of follow-on investments, which are subsequent funding rounds granted by investors to companies they have already backed. In this regard, 57 follow-on investment rounds were mapped in 2023, roughly in line with 2022 (60) and significantly higher than 2021 (32). This data brings the total investments in Italian startups to 330 operations (370 in 2022).

In terms of amount, the total investment in Italian startups, including follow-on rounds, is approximately 1.1 billion euros, down from just under 1.9 billion euros in 2022. The amount invested in foreign targets founded by Italian founders recorded just over 300 million euros, similar to the previous year. Summing these two components, the total comes to 1.4 billion euros (almost 2.2 billion euros in 2022 and over 1.9 billion euros in 2021).

Therefore, the overall data for the Italian venture capital market in 2023, although it has slowed down, still has all the potential to resume the growth seen in recent years and work towards closing the gap with the major European countries.

3. EMPIRICAL ANALYSIS

The previous two chapters have been crucial for this study, providing a clearer understanding of the nature and objectives of Venture Capital in Italy. The first chapter reviewed the overall functioning of the global Venture Capital world, focusing on the structures and the value added for innovative companies engaged in VC relationships. The second chapter examined the geographical and sectoral distribution of innovative startups in Italy, showing ad updated overview of the market, the players and the functioning of this world in Italy, with a focus on the regulatory framework and all the incentives provided by the government.

In this third chapter instead, an empirical analysis of this market will be provided.

This paper aims to achieve two main objectives, which are explored through Model A and Model B:

1. Is there a relationship between the amount invested by VC funds and the growth of startups in Italy?
2. Which are the main characteristics of startups that attract VC investments?

Thus, the analysis seeks to understand the relationship between the amount invested by VC funds and the revenue growth of portfolio companies, and identify the characteristics that make these companies attractive to VC investors.

In Model A, a simple linear regression will be performed between revenue growth, measured by the Compounded Annual Growth Rate (CAGR), and the Amounted raised by Startups from VC funds. Then, to complete the analysis, a second regression, with the same variables but excluding three big outliers will be performed to demonstrate if results changes. Afterwards, Model B, will be designed as another linear regression model, where the dependent variable is the Amount raised by startups, and the independent variables are the key qualitative and quantitative characteristics of the innovative startups present in the sample.

The following sections of this chapter will present the two models and their results. Prior to that, the reference sample and the observed variables will be introduced.

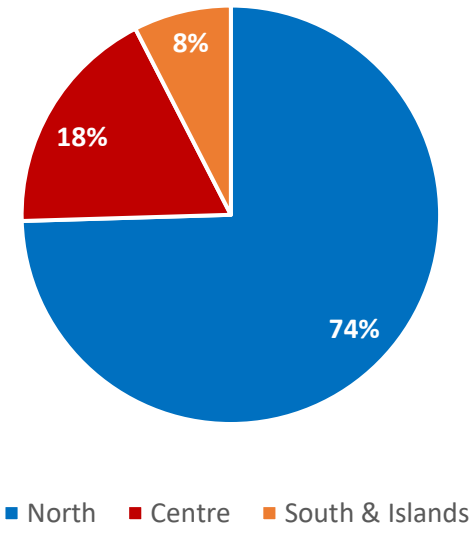
3.1 *Sample and variables definition*

Although innovative startups and SMEs are increasingly significant, acquiring comprehensive data on them remains challenging. Often, the available information is either fee-based or incomplete. Consequently, data for the study sample was meticulously collected from various sources. For the purpose of this study, both for qualitative and quantitative data, it was primarily used as main source "PitchBook.com", cross-referencing with other sources such as "LSEG" and "VeM Venture Capital Monitor Report 2023", together with "LinkedIn" platform as well.

The initial sample comprised around 150 Italian startups established between 2005 and 2021, compliant with the Growth Decree 2.0. This selection aimed to ensure diversity across sectors, geographic areas, amount invested and other features that will be explained more in Model B. Firms founded before 2012, prior to Decree-Law No. 179, were also included considering the investments they received in recent years, since the first significant one.

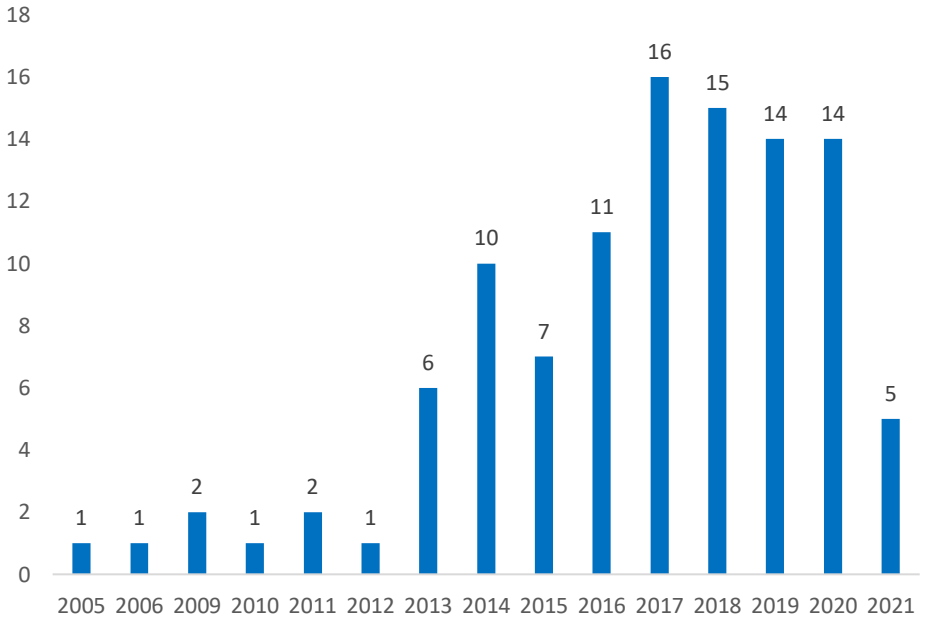
Due to incomplete data across the sample, in Model A, the sample was limited to 106 innovative startups. These units were chosen from the original 150 based on the availability of turnover data for the period since their first significant amount raised and the last financial data available. For Model B instead the sample was used entirely.
All the following data and charts are based on personal elaboration.

Chart 9: Geographical distribution of the Sample



Italy was the only country across which the sample of startups was sourced from. As shown in Chart 9, the majority are headquartered in the northern regions, accounting for 74.0% of the total. This distribution aligns closely with the figures of the CDP VC SGR 2022 Investment activity as depicted in Chart 5 in the previous chapter. The remaining portion is split among Central regions accounting for 18.0% and Southern regions and the two Islands for the remaining 8.0%. To be more precise in terms of regions, 56 startups are based in Lombardy and 9 startups are based in Piemonte and Lazio each. The remaining sample is split among other regions.

Chart 10: No. of startups founded by year in the sample



As previously mentioned, the companies in the sample were founded between 2005 and 2021. Most of these were established between 2016 and 2020, as illustrated in Chart 10. Notably, there is not a significant drop in the number of startups founded in 2020 even considering the Covid-19 pandemic. In this sample the drop is observable in 2021, not because of a decrease in startup activity but because of a higher difficulty in finding reliable data available in terms of revenue growth.

Chart 11: Sample sectoral distribution

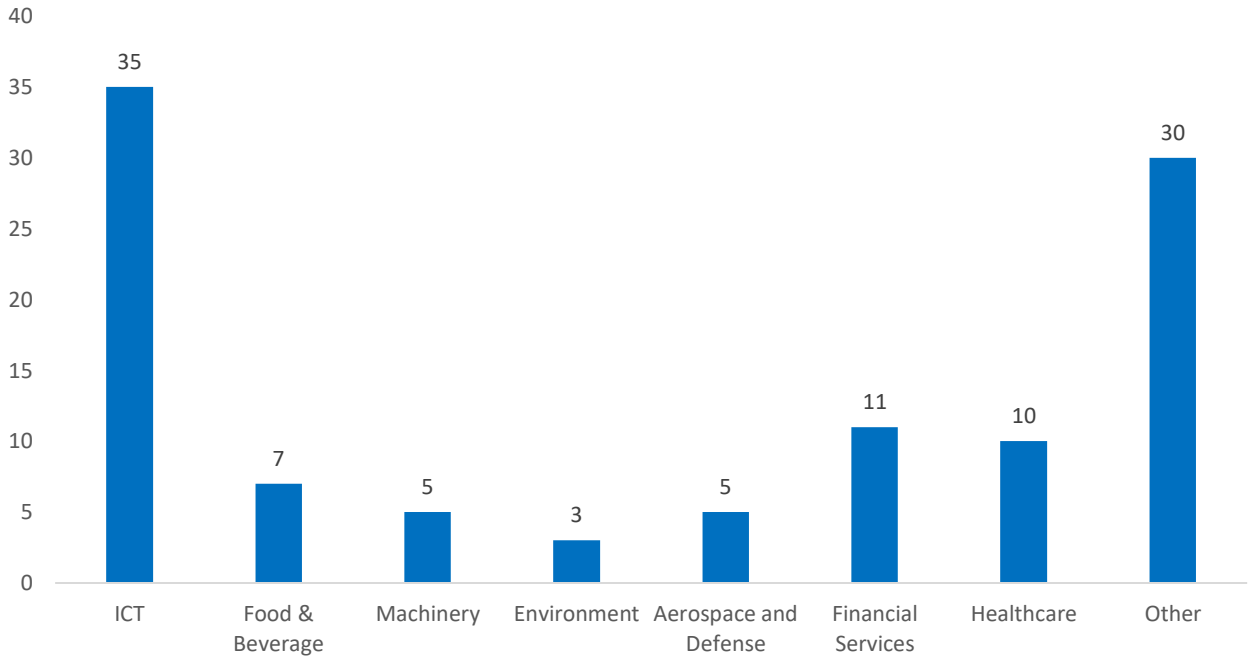


Chart 11 shows the sample distribution by sector, and ICT is the most represented sector with 35 startups, a data which reflects the confidence of the market in this field, and its broad applicability with its high potential rapid growth. Financial Services (11) and Healthcare (10) which have a substantial number of investments, are moderately represented, indicating as well a strong investor confidence in these sectors' growth and innovation potential. Environment (3), Machinery (5), and Aerospace and Defense (5), are considered “underrepresented sector”, which have fewer investments, likely due to higher capital requirements and longer timeframes for returns. The "Other" category's high representation highlights the wide genre of innovative startups attracting investor interest across various emerging and niche markets.

This distribution illustrates a small representation of investors' preferences and strategies, focusing on sectors with high growth potential, scalability, and the ability to leverage technological advancements. ICT is a rapidly evolving and expansive sector. The high number of investments could be due to the widespread adoption of technology, the ongoing digital transformation across industries, and the high potential for scalable solutions and innovation in areas like software, telecommunications, and internet services.

3.1.1 *Dependent variables*

In Model A, the dependent variable is the Compound Annual Growth Rate (CAGR) of the startups' turnover. Due to challenges in obtaining complete data for all initial sample units, a subset of 106 startups was selected for analysis. For these 106 units, turnover data from 2018 to 2023 were gathered. The data collection began from the first financial year relevant to the analysis, which could either be the year of the first significant investment received or the following year. The CAGR was then calculated for these startups using the following formula:

$$\boldsymbol{CAGR} = \left(\frac{End\ value}{Beginning\ value}\right)^{\left(\frac{1}{n}\right)} - 1$$

Table 8 presents the outcomes of the descriptive analysis conducted on the gathered data. Given that we are dealing with startups, there was considerable volatility in the data throughout the analysis. Another key factor contributing to this level of volatility was the turnover in the year 2020. The year 2020, being the onset of the global Covid-19 pandemic, significantly impacted the turnover growth rate.

Table 8: Descriptive statical analysis of CAGR of the startups within the sub-sample

Mean	Variance	St. Deviation	Maximum	Minimum
114.08%	6.02	2.45	2310%	-37.5%

For Model B, the dependent variable is the amount raised to date by startups. The dependent variable in this case, “amount raised”, is a quantitative continuous variable that can take on a wide range of values with arbitrary precision. As a quantitative continuous variable, “amount raised” can be modelled using linear regression techniques such as OLS, which is appropriate for continuous dependent variables. This model analyses the original sample of 200 Italian startups.

3.1.2 *Explanatory variables*

The explanatory variables analysed in this study can be summed as follows:

Table 9: Explanatory variables

Variables
Amount raised
Founder Age
Founder gender
CEO Age
CEO gender
Patents

The independent variable in Model A, as already explained, is the Amount raised by startups, considered in millions of euros of fundings. Table 10 below presents the outcomes of the descriptive analysis conducted on the gathered data. As already said for the CAGR representation in Table 8, given that we are dealing with startups, there was considerable volatility in the data throughout the analysis.

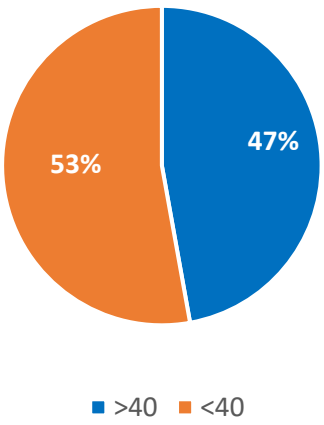
Table 10: Descriptive statical analysis of Amount raised by startups within the sub-sample

Mean	**Variance**	**St. Deviation**	**Maximum**	**Minimum**
€35.902m	16945.15	130.17	€830.7m	€0.01m

The high volatility of the fundings in the sample is mainly due to the different stage and type of round received by startups and the different years of funding.

Regarding the age of the Founder, the distinction made in this analysis is age Under or Over 40. Accordingly, within Model B it was used as a binary variable that takes value 0 if the CEO is under 40, 1 otherwise.

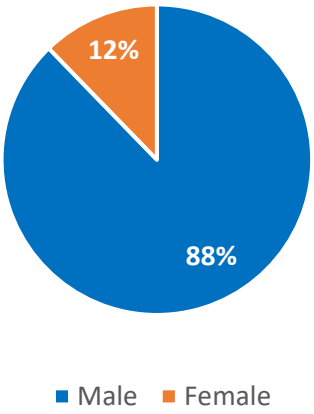
Chart 12: Founder age distribution within the sample



As can be observed in Chart 12, there is a certain homogeneity in the age distribution of the Founders of the startups in the sample. In fact, Founders aged Under 40 are slightly more than those Over (c. 53% vs. 47%).

The Founder gender variable was also used for regression purposes as a binary variable, with value 0 if the founder is Male, 1 if female. Chart 13 shows the gender distribution of startup Founders within the sample.

Chart 13: Founder gender distribution within the sample



The numbers shown above show a clear male dominance among the founders of the Italian startups sampled. These in fact correspond to c. 88 percent of the total (Chart 13).

Similarly to the age of Founders, the variable CEO Age was also analysed as binary, taking values 0 if CEOs are Under 40, 1 otherwise. The data shown by Chart 14 show of how the distribution within the sample is rather homogeneous. In fact, the values are equally distributed (Chart 14).

Chart 14: CEOs age distribution within the sample

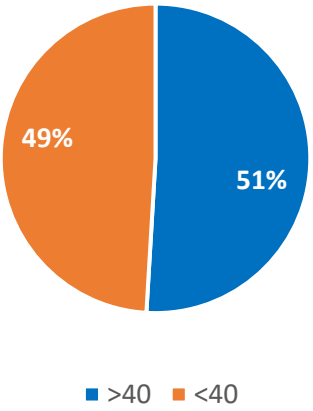
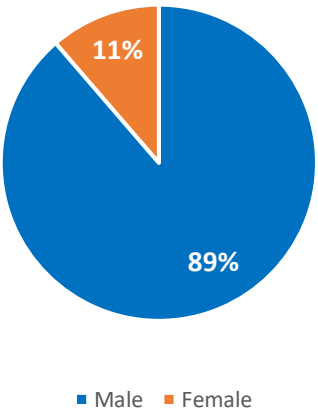


Chart 14 shows a distribution which is slightly different from the founders one. In almost all of the cases analysed, the founder and the CEO were the same person, while in very few cases not, and in

terms of CEOs age, there is a little predominance of over 40 (c. 51% vs. 49%). This difference can be explained by a possible higher experience sometimes needed in the management of companies, but in any case, the average age is still very close to 40 years.

Furthermore, the variable CEO gender was analysed as binary, with values 0 if CEOs are male and 1 otherwise. Chart 15 shows the distribution of the variable within the sample. The number of startups that have female only CEOs.

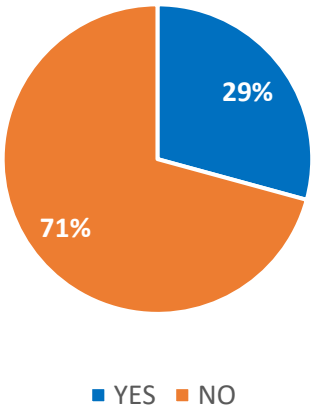
Chart 15: CEOs gender distribution within the sample



It is possible to see from the chart above how, again, male CEOs are the constant within the observed sample, in fact there is a clear predominance with a percentage of c. 89%.

Patents were also included as an explanatory variable in Model B. This variable was treated as binary, with values 1 and 0 indicating whether a startup owns patents or not. However, in this section, it is useful to highlight how many startups in the sample meet the requirement of owning or licensing patents as stipulated by Decree 2.0.

Chart 16: No. of startups with patents within the sample



Charts 16 illustrate that most of the observed startups do not possess patents. Only 31 startups, accounting for c. 29% of the total, own patents. This low percentage can be attributed to the challenges of innovation and the high costs associated with patent registration for young companies.

3.2 *Model A*

Model A aims to study the relationship between revenue growth of startups in Italy and the amount raised by them. As argued in the previous chapter, Italian venture capital market is a market still in development, with fluctuating years in terms of investments and opportunities for startups.

3.2.1 *First regression*

The analysis was therefore set on the sub-sample of 106 Italian startups, meeting the requirements set by the Growth Decree 2.0. Of these 106 entities, relative turnover data for periods among the year after the first significant funding and the last data available were collected. From these data, the compound annual growth rate (CAGR) was manually calculated. Thus, the variable "CAGR" represents the dependent variable.

The independent variable is represented by "Amount raised." This, for the purpose of the analysis, is a quantitative continuous variable that can take on a wide range of values with arbitrary precision.

Hence, the formula for linear regression is as follows:

$$CAGR = \beta 0 + \beta 1 \times \text{Amount raised}$$

Table 11: Model A results

	Estimation	**Standard error**	**Pr(>|t|)**
Intercept	0.8832	0.101	0.001
Amount raised	0.0003	0.001	0.643
n		106	
R squared		0.002	
Adjusted R squared		-0.009	

Let's start by interpreting the latter values, i.e., the model statistics. R-Squared is also called the coefficient of data determination: this measure assesses how much difference there is between the observed values of y in the sample and the values that the model estimated for y. In other words, it identifies the extent to which variation in the variable y can be explained by the regression line. In this case, the R-Squared takes a value of 0.002, indicating that the model explains practically none of the observed variability in the CAGR. In other words, the amount raised does not appear to be a good predictor of the CAGR.

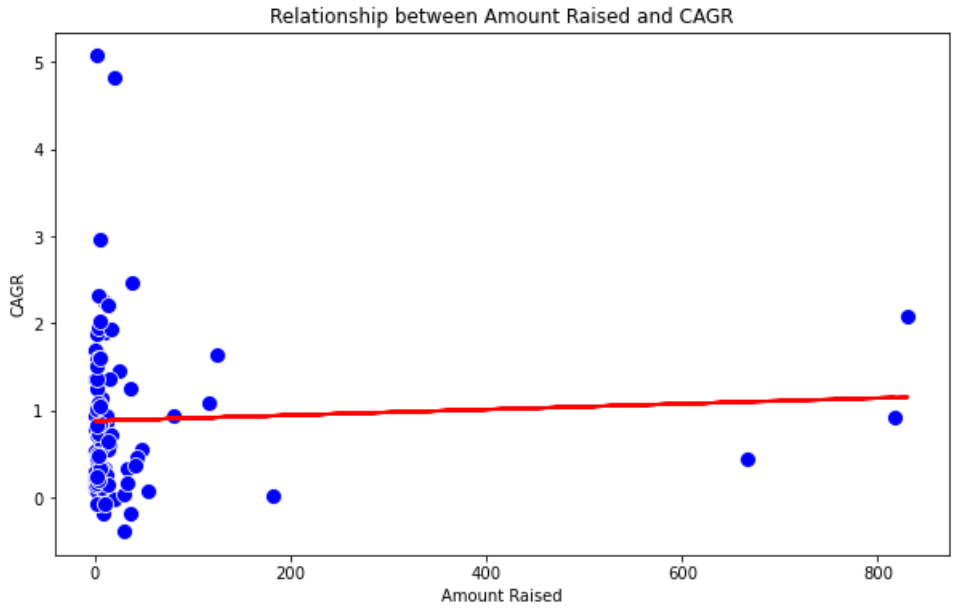
The Adjusted R-Squared, on the other hand, is adapted for the number of predictors in the model and is less optimistic than the unadjusted R-squared; in this analysis, the result is -0.009.

The intercept of the regression line, representing the predicted value of CAGR when Amount Raised is 0.8832, a measure that is statistically significant with a related very low p-value (<0.05), as it is in this case.

The slope of the regression line, which is the coefficient of the variable Amount raised, is 0.0003, indicating that for each unit increase in Amount Raised, the CAGR increases by 0.0003 units. This is not statistically significant due to the high p-value.

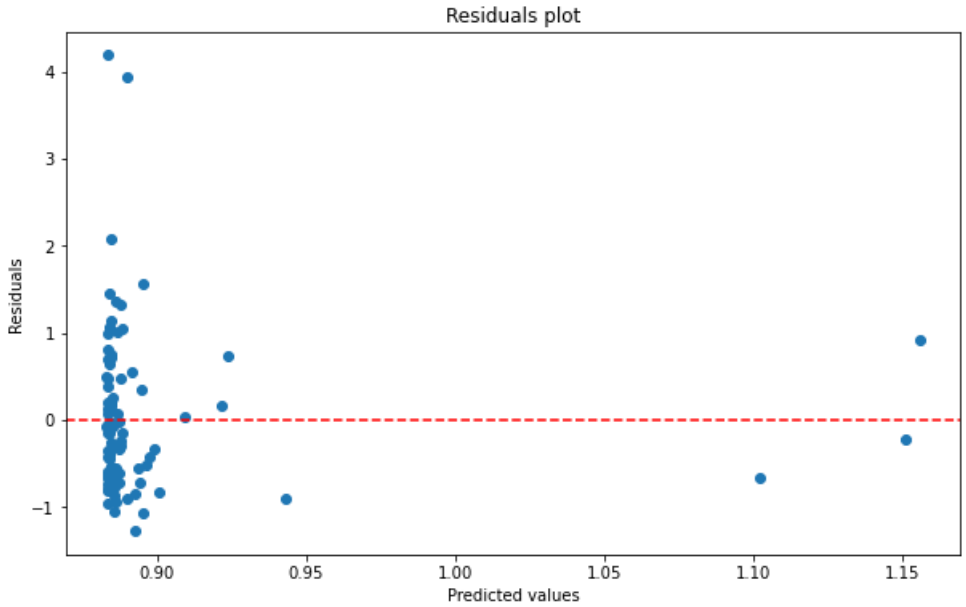
Therefore, the key result for the regression is that of the p-Value, which is equal to 0.643. This metric represents the overall significance level of the regression. The p-Value indicates the probability of obtaining results that are at least as extreme as those observed, assuming that the null hypothesis is true. In our case, the null hypothesis is that there is no statistically significant relationship between the independent and dependent variable. A p-Value less than 0.05 indicates that we can reject the null hypothesis. This metric results in 0.643; this indicates that there is not enough evidence to claim that the amount raised has a significant effect on the CAGR and therefore the model is not globally significant.

Graph 5: Model A, Linear relationship between Amount raised and CAGR



As observable from the scatter plot (Graph 5), most of the data points are clustered near the lower end of the amount raised axis, indicating that most startups raised a smaller amount. There are a few outliers with a significantly higher amount raised (around €600-800m). The linear regression line is almost horizontal, indicating a very weak linear relationship between the amount raised and CAGR.

Graph 6: Model A, Residuals analysis



The residual plot (Graph 6) shows the residuals (differences between observed and predicted values) on the y-axis and the predicted values on the x-axis and the red dashed line at y = 0 indicates where the residuals would lie if the predictions were perfect. From this plot, it is evincible that residuals are spread around the red dashed line, which is expected in a well-behaved model. However, the majority of residuals are concentrated near the lower predicted values, indicating that the model's predictions are mostly low.

The regression results suggest that the independent variable (Amount Raised) does not significantly explain the variation in the dependent variable (CAGR). The model has very low explanatory power (R-squared = 0.002), and the coefficient for Amount Raised is not statistically significant (p-value = 0.643). Therefore, there may be other factors not included in the model that influence revenue growth.

3.2.2 *Second regression*

In order to have an outlook of the sample without the three big outliers, with amount raised respectively of c. €817 million, €830.7 million and €666.8 million, a second analysis with the same structure of the first one of Model A has been pursued.

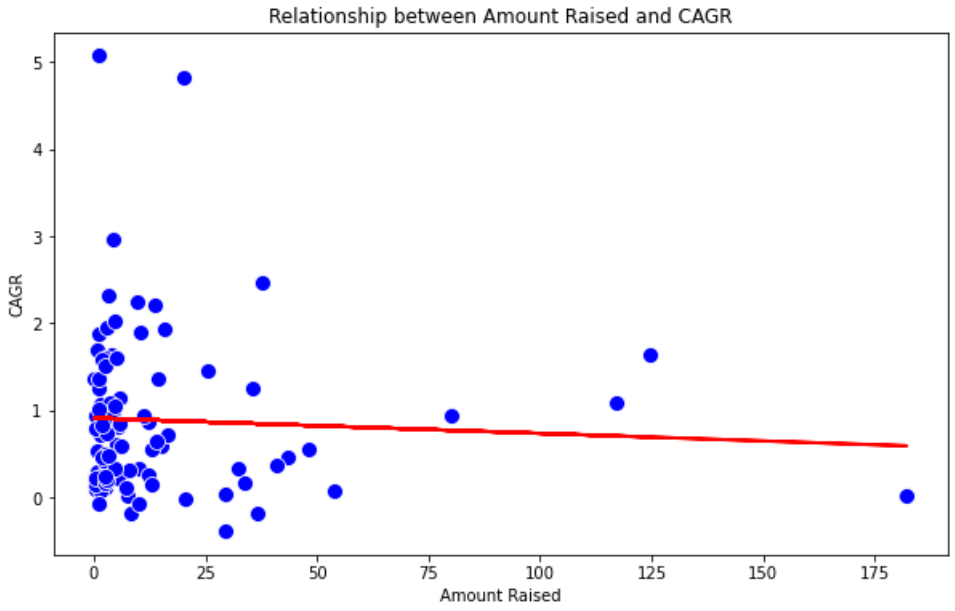
A summary of the regression is shown in table 12:

Table 12: Model A Second analysis results

	Estimation	**Standard error**	**Pr(>|t|)**
Intercept	0.9139	0.112	0.001
Amount raised	0.0001	0.004	0.623
n		103	
R squared		0.003	
Adjusted R squared		-0.009	

The values of R squared and Adjusted R squared are very low (0.003 and -0.009 respectively), suggesting that the model does not explain the variability of the data well. Additionally, given the significantly high p-value of the independent variable, being 0.623, it is not possible to reject the null hypothesis in this case. Therefore, also in this case the model does not demonstrate that there is a correlation between the amount raised and the CAGR of revenues.

Graph 7: Model A, Second analysis, Linear relationship between Amount raised and CAGR



The slope of the red line is very close to zero, suggesting a weak or non-existent relationship between the two variables. The distribution of points shows a high concentration around low amounts raised with a wide range of CAGR values. There are several points with high CAGR values even when the amount raised is low, indicating that a high CAGR can occur regardless of the amount raised. This visual representation supports the statistical finding that there is no significant correlation between the two variables.

3.3 *Model B*

As mentioned above on opening chapter, Model B aims to investigate what are the most significant characteristics of startups that lead to the realization of VC investments. Thus, the existence or non-existence of a relationship between the qualitative and quantitative characteristics of the startup and the amount raised by startups is analysed. The sample taken for Model B analysis is the initial sample of 150 Italian startups.

The dependent variable in this model is the Amount raised, which is a quantitative continuous variable that can take on a wide range of values with arbitrary precision.

Table 13: Summary of the independent variables of Model B

CEO Age (Under/Over 40)	0 = $Under\ 40$, 1 = $Over\ 40$
CEO Sex	0 = $Male$, 1 = $Female$
Founder Age (Under/Over 40)	0 = $Under\ 40$, 1 = $Over\ 40$
Founder Sex	0 = $Male$, 1 = $Female$
Patents	1 = Yes, 0 = No

Hence, the equation describing the model is the following:

$$Amount\ Raised = \beta_0 + \beta_1 Founder\ Gender_i + \beta_2 Founder\ Age_i + \beta_3 CEO\ Gender_i + \beta_4 CEO\ Age_i + \beta_5 Patents_i$$

Table 14: Model B results

	Estimation	Standard error	Pr(>|t|)
Intercept	38.7565	19.557	0.050
Founder gender	-17.9565	128.610	0.769
Founder age	-24.4352	67.211	0.003
CEO gender	14.5358	134.595	0.867
CEO age	19.2560	66.498	0.009
Patents	20.6346	28.040	0.464
n		150	
R squared		0.092	
Adjusted R squared		0.046	

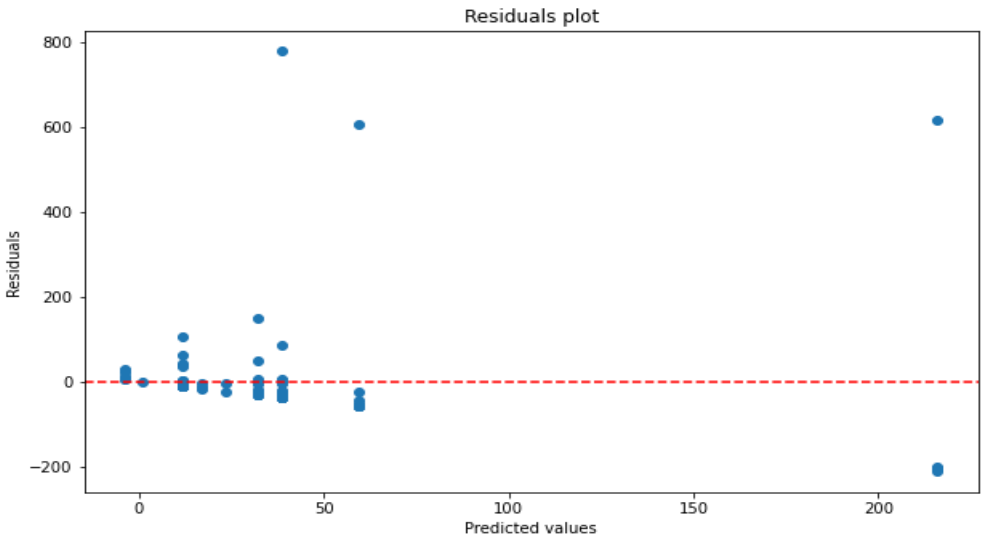
The basic coefficient R-Squared, in the context of Model B, is equal to 0.092, meaning overall that through the estimation of coefficients, we are able to explain the 9.2% of the variability in the dependent variable (Amount raised).

Coefficients for the variables in the model show the estimated relationship between the independent variable and the dependent variable. For instance, the coefficient for "CEO age" is 19.2560. This indicates that, a one-unit increase in CEO age (so CEOs Over 40) is associated with an of approximately $19.26 million in the amount raised.

As in Model A, the key result for this test is the p-Value. This is a measure of the overall significance level of the regression, and is used to test the null hypothesis that all the regression coefficients are equal to zero. A low p-value, which usually is below 0.05, means that the coefficient is statistically

significant. For instance, considering the test results in the table, the p-value for the "founder age" variable is equal to 0.003, suggesting that the age of the founder has an impact on the amount of funding that is received. The results further indicate that founder age and CEO age can be important determinants of the amount raised while founder gender, CEO gender and the existence of patents do not seem to affect the it.

Graph 7: Model B, Residuals analysis



Analysing the Residuals plot (Graph 7), the majority of the residuals are clustered around predicted values between 0 and 50. There are a few outliers with much higher residuals, indicating significant prediction errors for these observations.

In summary, this model suggests that, among the considered variables, founder and CEO age have a significant impact on the amount raised by a company, while other variables such as founder sex, CEO sex, and number of patents may not have a significant impact.

CONCLUSIONS

This thesis provides a complete overview of the crucial role of venture capital in contemporary economic context, with particular attention on Italian market for innovative startups and SMEs. Throughout an extended review of historical developments, organizational structures, investment processes and empirical data, the thesis highlighted the multifaceted contribution of venture capital for the growth and development of innovative companies.

The empirical results of this thesis wants to underline the significant impact that venture capital can have on the economic and financial development of companies in which it invests. Companies which receive venture capital financing benefit from the essential financial resources needed to expand their operations, develop new products and penetrate markets. Even more important, they gain access to strategic and managerial support that can significantly influence their successful trajectory. This support often includes mentoring, networking opportunities and strategical guidance, which are fundamental to face the challenges of the initial development phases and to achieve a sustainable growth.

In the Italian context, venture capital market, even if still in a maturing phase, shows a considerable potential. Government policies and legislative initiatives, as the "Decreto Crescita 2.0" and other fiscal incentives have been instrumental in creating a more favourable environment for investments in venture capital. These regulatory measures contributed to reduce the bureaucracy barriers, fostering the creation and the growth of innovative startups and encouraging the private investments in high risk and yield initiatives.

However, to fully realize the potential of venture capital in Italy, it is necessary to further develop several key areas. It is urgent to improve the support infrastructures, such as incubators and accelerators, which provide resources and critical guides to companies in their early stages. A greater collaboration between public and private players is essential to leverage the strengths of each sector and create a cohesive ecosystem that support innovation. Moreover, continuous adaptation of regulations to the evolving needs of the market is necessary to maintain a conducive environment for venture capital investments.

Promoting a culture that values entrepreneurship, innovation and risk is also crucial. This cultural shift can be facilitated through several educational initiatives, public awareness campaigns and the

celebration of successful entrepreneurial initiatives. By Fostering an environment that encourage and support innovative thinking, Italy can improve its competitiveness at a global level and attract major investment in venture capital.

The empirical analysis conducted in this thesis has also highlighted the importance of selecting the right entrepreneurs and management teams. The investment success in venture capital strongly depends on the skills and abilities of people leading the startups. Venture capitalists give a high value to human capital and their ability to identify and support talented entrepreneurs is a determinant variable for investment success. From the two models of this analysis pursued on our sample, the only variable that attract more funds from investors is being a manager with an age over the average (c. 40 years), this can be explained by a possible higher trust from investors in CEOs with a higher experience, and also possibly from a better network that managers which have been working for more years can have compared to younger ones. Generally, all other independent variables considered for the scope of this analysis seems to not have an influence on the success of startups, showing that probably the success is hidden behind the quality of the idea at the base of the startup, which is the most important driver.

In conclusion, venture capital represents a strategic leverage fundamental for the future of innovation in Italy. Its sustainable development is essential to foster the economic growth and fill the innovation gap with other European leading economies. Innovative startups, sustained by venture capital, have the potential to guide the economic productivity, competitiveness and dynamism in Italy. Achieve these objectives requires a commitment of every stakeholder, including government institutions, private investors, educational institutions and the organization in support of companies. Collaborating to create a vibrant ecosystem in support of innovation, Italy can unlock all of its potential entrepreneurial talent and secure a prosperous economic future.

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