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VC readiness in Bio-entrepreneurship and its challenges

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Abstract

Early years of the modern life sciences industry and respective venture capital financing transactions date back to the 1970s. Venture capital is a type of private equity, a form of financing that is provided by firms or funds to small, emerging firms that are deemed to have high growth potential, or which have demonstrated high growth. In this article we are going to speak about three entrepreneurial finance elements which are: Business Angles (BAs), Venture Capitals (VCs), and Bank loans, with a special attention to the VCs. A comparison between these three cases will be provided and the emphasize is on VCs. The most important challenges and risk-taking by VCs will be discussed.

Keywords: Entrepreneurial finance, Venture Capital, Bio-entrepreneurship, Co-investment, Trade-off.

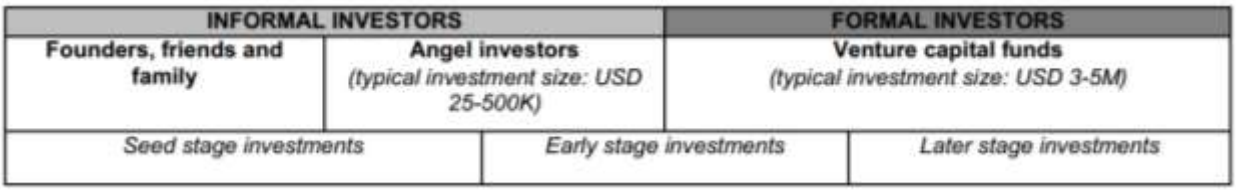
۱. Introduction

Bio-market is an increasingly high value market which is in growth and in need of high amount of money, credit, and capital for its early and late stages of formation which will be discussed as different investing rounds in bio/life science-based new firms. According to the Oxford Handbook of Entrepreneurial Finance [1], entrepreneurial finance is a topic that covers several sources of capital, such as Business Angles (BAs), Venture Capitals (VCs), private equity, hedge funds, microfinance, project finance, Bank loans, and so on [2]. Investors are essential actors in innovation ecosystem since they provide incentives for innovation, supply information, reduce uncertainty, foster cooperation, and make available mechanisms to handle conflicts [3]. Herein, we want to analyze three actors of entrepreneurial finance environment:

Bank Loans: Banks are reluctant to lend to small and young firms due to their perceived riskiness and because of the high risky nature of Bio-entrepreneurial activities whereas it high-profit results [4, 5].

Business Angles (BAs): BAs are high, net-worth individuals, typically with considerable business experience, who invest both their personal funds and managerial experiences into early-stage ventures [6]. Angel investors are less sensitive to market cycles than venture capitalists and tend to keep information about their investments private, and sometimes it would be hard for entrepreneurs to find them [4].

Venture Capitals (VCs): VCs are high risk averse individual or companies who are ready to invest not only in seed and early stage of a technology based new firm's formation, but also to the late stages and different investing rounds (Pic.1) [7].VC is a booster of the development of high technology industries like Biotechnology and medical science which promotes many high technology ventures to grow [8].



Pic 1. Equity investors at the seed, early and later stage of firm growth [9].

۲. A comparison between three elements of entrepreneurial finance environment:

Bank loans versus VCs:

As it was clarify before, banks are not as eager and risk averse as VCs are. They like to put their feet on a stable place for investing.

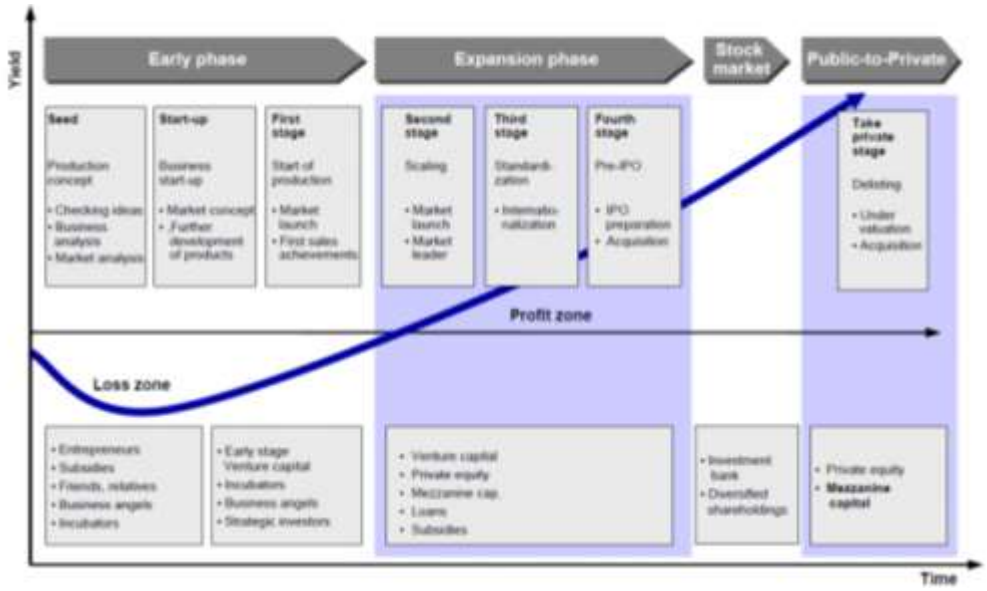
BAs versus VCs:

The most obvious different is that BAs (informal investors) invest only in seed and early stage of a start-up while VCs (formal investors) do this in both early and late stage (Pic.2). Angel

investors support a much wider range of innovation than VC firms as they traditionally invest locally and in a wider range of sectors than venture capitalists. Both of them tend to invest in a portfolio of companies, not just in one or two. In addition to the money provided, angel investors play a key role in providing strategic and operational expertise for new ventures [4].

VCs (independent VC) versus CVCs (corporate VC):

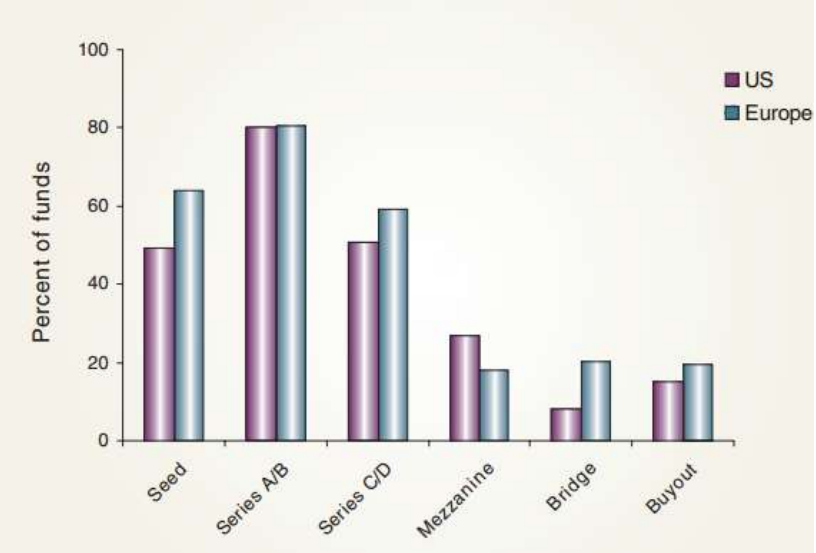
Corporate venture capitalists are better at helping their portfolio forms gain wider market credibility and attract customers. Whereas independent venture capitalists work with a wide network of people outside of their own organizations, the experience and contacts of corporate venture capitalists may be more defined by and focused on their own corporation. Corporations often have a better understanding of technological developments in their key product markets. Independent venture capitalists are more likely to provide start-ups with information on competition. At the end, VC investors seem to make entrepreneurs happy by arranging financing, recruiting key employees, advising on competition, and developing organization. CVC investors seem to make entrepreneurs happy also by attracting further financing, but also by attracting foreign customers, and advising on technology [10].



Pic 2. Life-cycle of a firm and stages of financing, Natusch4 (2003); OECD4 (2013d)

In biotechnology (Pic 3), for example, it is often difficult for an outsider investor to assess with sufficient accuracy the potential of a new technology. In such cases, the investment by a respected “big pharma” corporation may effectively signal the attractive prospects of the start-up to less informed outsiders. As such, the actions of the corporate investor help reduce

information asymmetries that may limit the future prospects of the start-up company [10].



Pic 3. Percentage of VC funds that invest in each financing stage. This is a snapshot of investment strategy for European and US venture capitalists investing in biotechnology companies. This graph combines data from all fund stages: fundraising, investing, investing complete and liquidating. Note that funds may invest at multiple stages, so the data will add up to more than 100%. Source: BioAbility Survey 2004 [11].

What VCs looking for:

- Market opportunity
- Technology / Competitive advantage
- Credible and creative team [12]
- Well-suited business plan
- Communication skills and networking of the start-up
- Amount of money and the time for investing [7]

Analyzing a project by VCs:

- Comparison method (by other industries or firms)
- Financial performance method
- The risky investment method [7]

Financing for start-ups via VC investment:

- Shareholding
- Loan payment
- Combination of above issues [7]

Methods for returning the revenue of VCs:

- The start-up will be bought by a bigger company

- Stock sale via IPO [7]

۳. Risk and challenges toward VC pathway:

Albeit venture capitalist has a high amount of profit, it is a high risky investing. So, there will be a trade-off in this case which may suffer the both side, entrepreneur and the VC (Pic 4). Safeguards, used by entrepreneurs, reduce realized risk but at the cost of lower social interaction [13]. What will help this situation is to find the best fit VC for a special start-up, so they will have less information asymmetry, which leads to lower trade-off and risk acceptance. Despite some differences in the venture capital flow patterns between biotechnology and medical technology, both life sciences subsectors face severe challenges. Three aspects are predominant, namely a)the availability of venture capital for innovative and promising start-ups both in the early and the expansion stage, b) how to manage the investment given the specific risk-return trade-off of life sciences investments, and c) which business models to choose for the companies active in these industries [14]. Whilst VCs are spreading their risks and working with many companies, an entrepreneur is typically devoted to only one company at a time. Therefore, it follows that the entrepreneur has a more concentrated risk exposure and should do even more in-depth research than a VC [12].

Potential risk factors	Potential factors of success
High commitment of resources in one block.	Sequential commitment of resources: investments in blocks according to progress and attaining intermediate objectives.
Size and stages of the project difficult to define.	Controlling the window on the market for commercial exploitation.
Frequently going over budget: ♦ going into large scale production; ♦ adoption of state-of-the-art technology; ♦ setting up in countries which are not well-known.	Cost containment. Variable costs dominating fixed costs.
Unknown new competitors.	New environment = new opportunities.
New product features.	Competitive advantages.
New processes.	New market = new customers.
Unknown revenue drivers. Strong variance of comparables, or distant comparables.	New revenue drivers which will potentially generate more income than cost reduction projects or expanding sales.
Need to understand the complex interaction between different new markets and different technology factors which change over time	Market sufficiently educated for the adoption of the service or product offered.
'Spillover' effects ♦ leverage on existing company resources; ♦ cannibalization of old products.	'Spillover' effects ♦ opening towards new opportunities which had previously been unsuspected; ♦ possibility of developing other new projects by chain reaction.

Pic 4. Risk factors and factors of the success of CVC projects [15]

٤. Conclusion

According to discussed cases, now it is clear that VCs are one of the essential roles in the innovation ecosystem and it should be more flourished not only by individual investors or big companies, but also by the government and banks. It is better for entrepreneurs to choose suitable VCs from the first rounds, because if their VC has a good reputation it will help to attract more VCs, more customers, more values, and even more credit for the start-up [12, 16]. Nowadays, big companies have started investing in new emerging technology-based

companies especially in bio markets, fintech, biotechnology, and IT. So, the best strategy for an entrepreneur is to clarify whether she or he wants to establish a company or a product, and then chooses the best fit VC with high reputation and high capital investing.

References

1. Cumming D. The oxford handbook of entrepreneurial finance: Oxford University Press; 2012.
2. Wallmeroth J, Wirtz P, Groh AP. Venture capital, angel financing, and crowdfunding of entrepreneurial ventures: A literature review. Foundations and Trends® in Entrepreneurship. 2018;14(1):1-129.
3. Lehoux P, Miller F, Daudelin G. How does venture capital operate in medical innovation? BMJ innovations. 2016;2(3):111-7.
4. Wilson K. Financing high-growth firms: The role of angel investors. 2011.
5. -و ضرورت ورود بانکها به حوزه استارتآپها، شتابدهندهها و صندوق مؤدی ح. اهمیت

های سرمایهگذاری خطرپذیر. کنفرانس ملی فرصت ها و محدودیت های سرمایه گذاری در حوزه صنعت خراسان جنوبی۱۳۹٦.
6. Scheela W, Isidro E, Jittrapanun T, Trang NTT. Formal and informal venture capital investing in emerging economies in Southeast Asia. Asia Pacific Journal of Management. 2015;32(3):597-617.
7. مقدم محعقب. ساختاری مطلوب برای سرمایه گذاری های پرمخاطره شرکت های سرمایه گذاری. دومین همایش بین المللی افق های نوین در علوم مدیریت و حسابداری، اقتصاد و کارآفرینی ایران۱۳۹٦.
8. Jin Y, Zhang Q, Shan L, Li S-P. Characteristics of venture capital network and its correlation with regional economy: evidence from China. PloS one. 2015;10(9):e0137172.
9. Wilson KE. Policy lessons from financing innovative firms. 2015.
10. Maula M, Autio E, Murray G. Corporate venture capitalists and independent venture capitalists: What do they know, who do they know and should entrepreneurs care? Venture Capital: An International Journal of Entrepreneurial Finance. 2005;7(1):3-21.
11. Lee DP, Dibner MD. The rise of venture capital and biotechnology in the US and Europe. Nature biotechnology. 2005;23(6):672.
12. Leytes LJ. Raising venture capital in the biopharma industry. Drug discovery today. 2002;7(22):1125-7.
13. Maula MV, Autio E, Murray GC. Corporate venture capital and the balance of risks and rewards for portfolio companies. Journal of Business Venturing. 2009;24(3):274-86.
14. Gantenbein P, Herold N. Venture Capital Investments for Life Sciences Start-ups in Switzerland. CHIMIA International Journal for Chemistry. 2014;68(12):836-9.
15. Lantz J-S, Sahut J-M. Corporate venture capital and financing innovation. Probl Perspect Manag Google Scholar. 2010.