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STARTUP FINANCING MODELS BASED ON THE EXAMPLE OF THE PRIVATE SECTOR IN GERMANY AND UKRAINE

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Abstract. *The article examines the model of financing startups at the initial stages of the life cycle in Germany and Ukraine. Characteristic features of life cycle stages, types of investors investing in startups, and financing rounds are highlighted. Financing of startups is divided into external (between two parties, there are obligations signed contracts) and internal (mostly it is the founders' funds or non-refundable assistance from close friends). Analyzing the financing model in Germany and Ukraine allowed us to identify common features; in particular, corporations, venture capital, and angels occupy the most significant number of investors in the overall structure. Corporate capital also plays the most significant role in Germany regarding the number of cases financed. However, the share in the total number of cases financed is lower than in Ukraine. In the four phases, venture capital is always used the most concerning the entire period, followed in second place by angels and corporates, but only in the first three phases. In the Series A phase, corporates are then ahead of angels, possibly because the startups in this phase are already more established, need fewer advisory services (offered by angels), and, with a product/service already launched on the market, become more attractive for established companies to expand their product range. Funding volumes in Ukraine need to be more systematic, as the year-by-year analysis highlights the dominance of different types of investors in financing. Analysis of financing by financing rounds showed that the most significant part of financing falls on initial rounds when startups enter the market with their idea. For series A, investment is made only by venture capital. This trend increases the likelihood of foreign investment in Ukrainian startups in the next financing rounds. In Germany, all types of investors have invested the most in series A in recent years. For both financing models, it is necessary to expand the differentiation of types of financing, which will allow to adjust better the provision of funds to the needs of*

the startups in each of the financing rounds and to reduce the mortality of startups in the first stages of the life cycle.
Keywords: *startup, startup financing model in Germany, startup financing model in Ukraine, private sector, venture capital, angel, corporate.*

Introduction. Funding for startups is an essential factor in successfully implementing an idea at any stage of the life cycle and provides opportunities for further scaling. Participants in the startup financing sector are essential in the startup ecosystem, as they directly influence the increase in the number of startups in the global market. Funding models for startups in Ukraine and Germany are characterized to a greater extent by the expansion of the network of private financing, which dominates the state financing options. Venture funds, corporations, and business angels finance startups at the initial stages of the life cycle and continue to support them until one of the last stages. The study of specific features of private financing in Germany and Ukraine will allow us to determine the priority financing methods for startups and the directions of development of the startup financing sector for countries, taking into account their experience.

Review of related research and publications. The works of Heydor A. P., and Bizbiz T. M. are devoted to studying the financing of startups in Ukraine. [3], Moiseyenko T. [7], Shuba M., Shuba O. [10] Peculiarities of startup financing were studied by Gädckens, C., Wallau, F., Michels, J., Ossola, M., Shin, N.- H. [5], the international practice of startup financing is highlighted in the works of Janeway W. H., Nanda R., Rhodes-Kropf M. [13] and others. Existing studies that would allow for the formation of a model of financing startups in Ukraine and Germany describe fragmented financing, which determines the relevance of this study.

The aim of the study. To ensure effective management of the development of startups in the context of the life cycle, it is necessary to analyze the features of each stage by attracting financial resources from the private sector, taking into account funding rounds (Pre-seed, Seed. Seed+, series A), in the example of Ukraine and Germany.

Results. Funding for startups is one of the most critical factors in successfully entering the market with a new idea or service, which startups search for throughout the startup life cycle. At the initial stages of fundraising, it take place in an active phase, and during the final stages of financing, it goes into a passive phase.

Blank S. and Dorf B. understand the development of startups as the systematic development of a nascent business idea into a commercially viable and scalable enterprise. It covers the stages of ideation, verification, execution, and growth, including continuous learning, adaptation, and strategic decision-making [1]. The transition of a startup to a commercially viable enterprise is ensured by the search and attraction of financial resources provided by the private and public sectors.

The life cycle of a startup's development is a set of successive stages of development that are distinguished by specific challenges, risks, and priorities and require the transformation of approaches to the management of organizational, financial, and human resources to ensure the success of a startup. Therefore, for the idea to be implemented and the startup to be successful, proper management is a necessary resource at different stages of development. During the life cycle, startups have different investment rounds, which differ both in the amount of funds raised and in the types of investments (Table 1).

The first preparatory stage (Pre-seed) involves preliminary preparation, work with developing an idea up to a working prototype, and testing of product versions – to a version ready for release on the market. At the idea generation stage, it is necessary to analyze the fundraising experience of previous startups related to their segment, identify mistakes, and try to avoid them in the future. Building a cooperative relationship concerning attracting financial resources is one of the main elements of bringing an innovative idea to the market.

Table 1

Characteristic features and investors at the stages of the startup life cycle

Stage	Features of the stage	Investors	Investment round
Pre-seed	there is an idea team created	Own funds Friends, Family, Fools Competitions (higher education institutions) Pitchdrive	Pre-seed
Seed	A minimally viable product The product is suitable for the target audience Customer engagement has begun	Angels Crowdfunding Accelerators Incubators Grants Initial funds of large corporations	Seed (for deals worth 1-4 million dollars, when the round took place 0-2 years after the company was founded)
Startup	work product or service clear business model proven revenue model a clear path to business scaling	Strategic investors, corporations, qualified investors, venture funds	SERIES A: For deals of $4-15 million
Expansion	The startup earns profit, an efficient team, and a large customer base	Direct investment funds, leasing, factoring, purchase lending	Series «B» involves investments spent on business development and growth (for deals worth 15-40 million dollars)
Sustain	income (usually net), a reliable management team, a clear development strategy and a clear plan for using funds to achieve growth goals,	Hedge funds, private equity companies, investment banks	SERIES C : for deals of 40-100 million dollars
Exit	clear exit strategy for investors and a plan for the future development of the company, activities related to mergers and acquisitions, IPO	late-stage venture capital firms and private equity firms	Megarounds: for deals worth $100-250 million Megaround +: for deals worth more than $250 million

Developed by the authors based on [2]

In the scientific literature, the approaches established by the practice of Silicon Valley are also widely discussed, particularly concerning financing. Yes, at the beginning of the implementation of one’s idea, the “three F” rule is used in startups: only family (Family), and friends (Friends) believe in it and support it financially, and fools. The main advantage of

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such financing is the absence of debt and the opportunity for startups to make decisions and dispose of profits independently. However, the amount of own and family funds invested in startups is insignificant primarily [3, c. 75]. Also, one's experience and history are essential to attract funds at the first stages. Therefore, experienced startup entrepreneurs can raise funds more effectively at the seed stage. At the same time, attracting funding from external sources creates greater responsibility for new founders and requires establishing communication with business partners, who can act as mentors.

The second stage of "Seed" – launching a project into operation or a product into production - is characterized by an already formed clear idea. However, there is a significant risk in developing a new technology; the circle of investors is narrow, and potential profit is yet to be expected. Among the essential problems that arise at this stage are uncertainties with legal aspects, namely the right to an invention or an innovative idea (intellectual property), registration, taxation of a startup, and distribution of dividends. To minimize these risks, it is possible to use legal support or consulting. Concluding cooperation agreements with partners, obtaining an electronic digital signature [3].

The "Startup" stage includes three components: early growth, venture financing, and late growth, characterized by the appearance of the first customers and stabilization of the startup in the initial market, receiving financing from venture capital funds.

Startups can attract both internal and external sources of funding. Internal sources have the advantage that the founder owns the startup, but these sources are limited in nature. External sources have a wide range of financial instruments. However, part of the startup profit or share belongs to the investor. The choice of funding source depends on many factors, including planned scaling, customers, innovativeness, and the possibility of making a profit in the short or medium term.

According to StartupBlink 2023 ranking of startup ecosystems of the world, Germany is in the top 10 best global ecosystems. It ranks 7th among 100 countries, and Ukraine is in the top 50 countries and ranks 49th. The advantages of the Ukrainian ecosystem highlight the high professionalism of developers in creating scalable and global technologies. In the part of the financing, it is stated that the Strategic Vision for 2025 included financial support for startups in the early stages through financing and facilitating access to support services, as well as strengthening globally competitive incubation programs and acceleration. According to the report, the German financing ecosystem is characterized by a diversified support system for startups, particularly a startup strategy grants for starting a business [4].

According to the analysis, the most significant number of investors in Ukraine and Germany are corporations, angels, and venture capital (Fig. 1). Corporate capital plays the most significant role in Germany regarding the number of cases financed. However, the share of the total number of cases financed is significantly lower than in Ukraine. Germany has a larger share of business angel financing compared to Ukraine. One reason for this could be the activities of the "Business Angels Netzwerk Deutschland e.V.", supported by government funding [5]. In Ukraine, the most significant amount in the financing structure is occupied by corporations, that is, large companies that invest their funds in startups (Fig. 1).

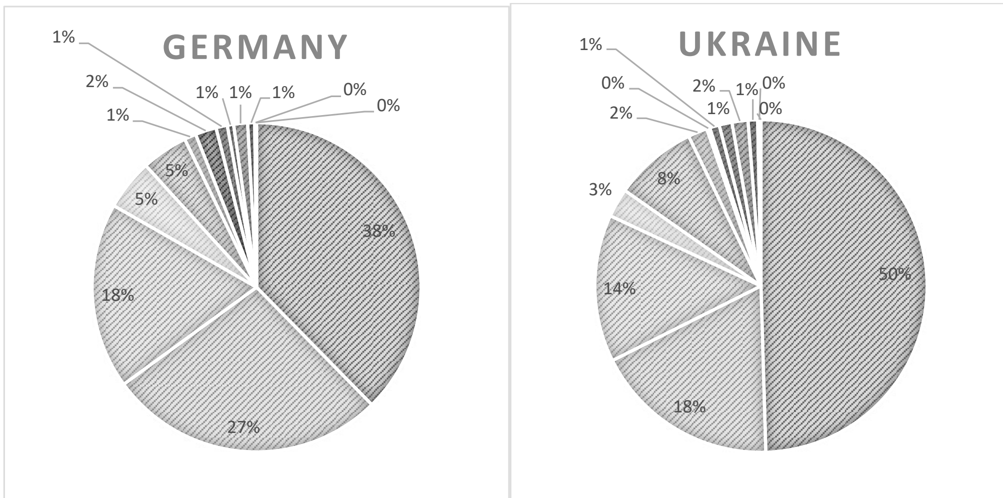

Fig. 1. The financing structure of Germany and Ukraine
Developed by the authors based on [6]

Corporations see their advantages in access to external innovations, cooperation with innovative suppliers, customer orientation and personalization, development of entrepreneurial spirit and flexibility from the point of view of the functioning of the company, its corporate culture, quick orientation in market development issues; opportunities for generating new sources of income and opening new business models [7].

When looking at major German cities, most start-up financing in Germany is recorded in Berlin and Munich (see Figure 2). In Frankfurt am Main, in contrast to the other significant cities considered, venture capital financing is by far the most frequent form of financing in quantity. The reason for this could be that the city, considered a German financial center, is home to many venture capital companies. The concentration of the most significant number of investors in the capital, Kyiv, characterizes Ukrainian cities. Despite the war and the relocation of many enterprises to the western regions, Kyiv remains the largest concentration of investors.

2021 is considered a record year for European start-up financing [9]. In Germany, too, significantly more capital was raised than in previous years (fig. 3). The high capital inflows resulted in the fact that American investors looking for yield opportunities in the low-interest environment considered European start-ups worthwhile investment objects [9]. In 2022 and 2023, the investment volume in the German start-up market declined significantly again, possibly also because capital investors west of the Atlantic found better investment opportunities on their doorstep again due to increased market interest rates.

Noticeably, the value per year of business angel capital has increased significantly in the last few years (yellow line). This once again underlines the recent increased importance of business angel financing and could be related to the activities of the “Business Angels Netzwerk Deutschland e.V.” already described above.

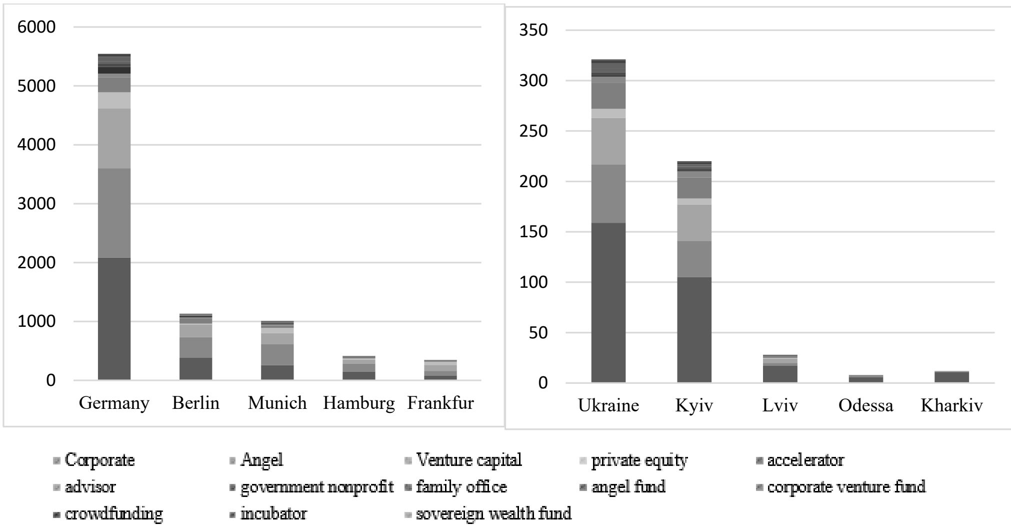

Fig. 2. Financing cases in Germany and in Ukraine per 2023 developed by the authors based on [8]

Business angels are high-net-worth individuals who invest their funds, as well as their time and expertise, in unlisted companies to which they have no family ties in the hope of financial gain. Business angels finance early-stage startups. At the stages (pre-seed, seed), when the founders do not have the opportunity to attract, for example, bank loans and investments from venture funds, In conditions of this type of use, decisions are made more quickly, which makes the financing process more dynamic and flexible, Mostly business angels choose projects located in their geographical location [10, p. 163].

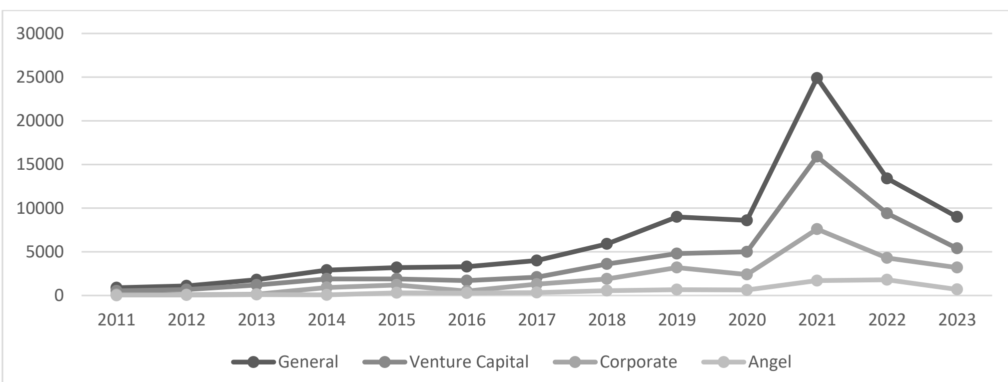

Fig. 3. Funding of startups in Germany (million US dollars) developed by the authors based on [11]

Ukraine was also characterized by an increase in startup funding in 2021. The activity of startups has undergone significant changes in recent years. In the conditions of the COVID-19 pandemic, at the initial stages, startups needed help finding funding and adapting to work in a remote format. At the same time, the situation for startups that had an idea in the field of health created a positive character since startup entrepreneurs adapted their idea to market demand, entered foreign markets, and received financing from foreign funds. This trend also explains the increase in the amount of funding, as startups produced new ideas in the field of health and in the field of remote work or training, which was necessary for all areas of business (fig. 4).

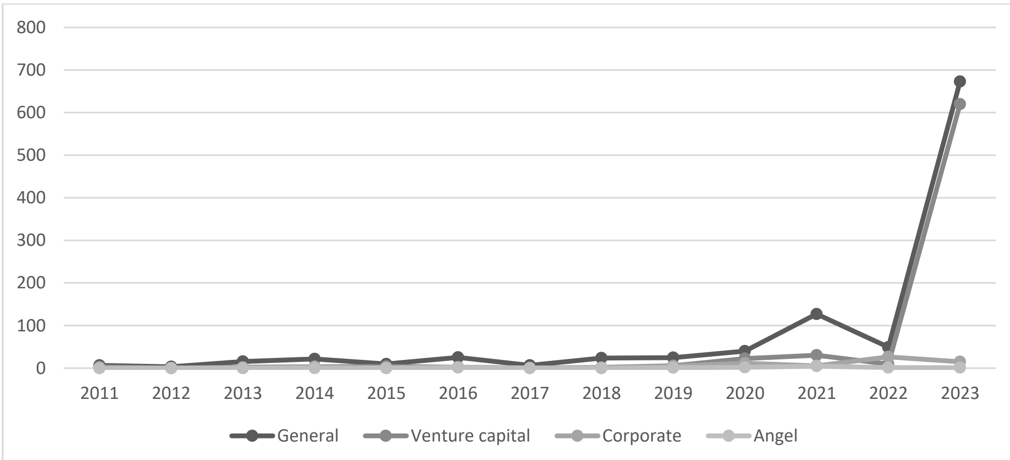

Fig. 4. Funding of startups in Ukraine (million US dollars) developed by the authors based on [11]

Despite the ongoing war, Ukrainian startups generated more than $6 billion in revenue in 2022 – $542 million more than in 2021 – and have tripled in value since 2020. These technology companies are vital to laying the foundation for Ukraine's post-war economic recovery [12]. A significant increase in financing in Ukraine for ten months of 2023, namely thanks to venture capital, may be caused by the expansion of the network of foreign venture financing, which has resumed their activities since the beginning of the war or created new financing programs for Ukrainian startups. Startups in military technologies have become a separate direction of investment.

In terms of the financed volume, venture capital in Germany always takes the top position in start-up financing in the years from 2011 to 2021 across all financing phases (fig. 5). This indicates that, on average, significantly higher amounts are spent per financing case by the investors in venture capital than in the other financing variants.

According to foreign researchers, venture capital is associated with innovative and fast-growing companies in the economy. Startups that commercialize transformative technologies receive venture capital support. Capital raised by venture capitalists is invested in young, innovative startups during the first few years of the fund's existence. Then, venture capitalists participate in the management of startups and support them, helping to grow and develop organizationally until the stage of exit – sponsorship of the initial public offering

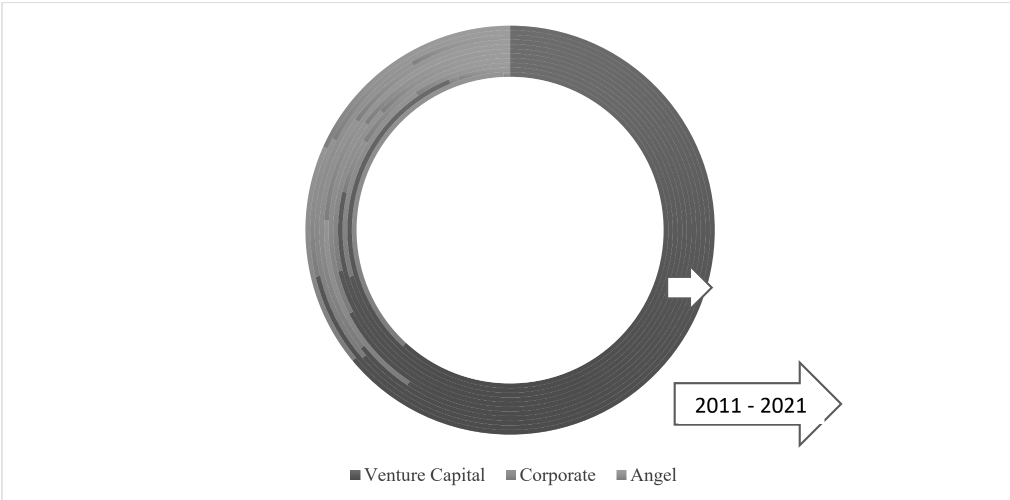

Fig. 5. Comparison of the volumes of start-up financing models in Germany developed by the authors based on [11]

of shares ("IPO"), or the sale of the enterprise through a merger or acquisition agreement [15, p. 111].

The Ukrainian financing model is characterized by changes in the amount of financing by types of investors. Although the share of venture capital in the volume of financing is the largest, for some years, there has been a significant decrease in positions compared to corporate financing and angels (Fig. 6)

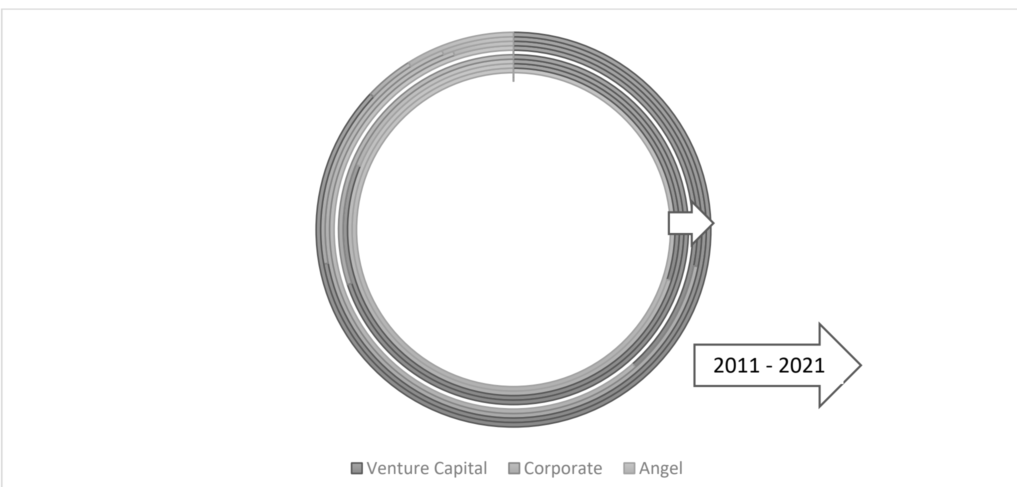

Fig. 6. Comparison of the volumes of start-up financing models in Ukraine developed by the authors based on [11]

Determining the amount of financing according to the rounds allows for highlighting weak and strong points in the financing model since, at certain stages of the life cycle, startups have a great need to attract investments. With funding and sufficient funding, promising startups may stay on the market map. Accordingly, the innovation that was laid in the idea may not be implemented or will be postponed for a long time.

In the sum of the period under consideration from 2011 to 2021, the capital requirement in Germany is by far highest in the Series A phase and lowest in the pre-seed phase (Fig. 7). This is probably due to the characteristics of the phases in question: In the pre-seed phase, the focus is on idea development; material resources and personnel for service production are not yet paramount. In the Series A phase, on the other hand, the implementation of the business idea is at an advanced stage, which requires corresponding fixed assets and staff capacities. Across all four phases, venture capital is the most heavily used, as already described above. In second place in the first three phases is business angel financing, followed by corporate equity. In the Series A phase, corporate equity financing then moves ahead of business angels. This is possibly due to the fact that the start-ups in this phase are already more established, require fewer advisory services (offered by angels) and, with a product/service already launched on the market, become more interesting for established companies to expand their product range.

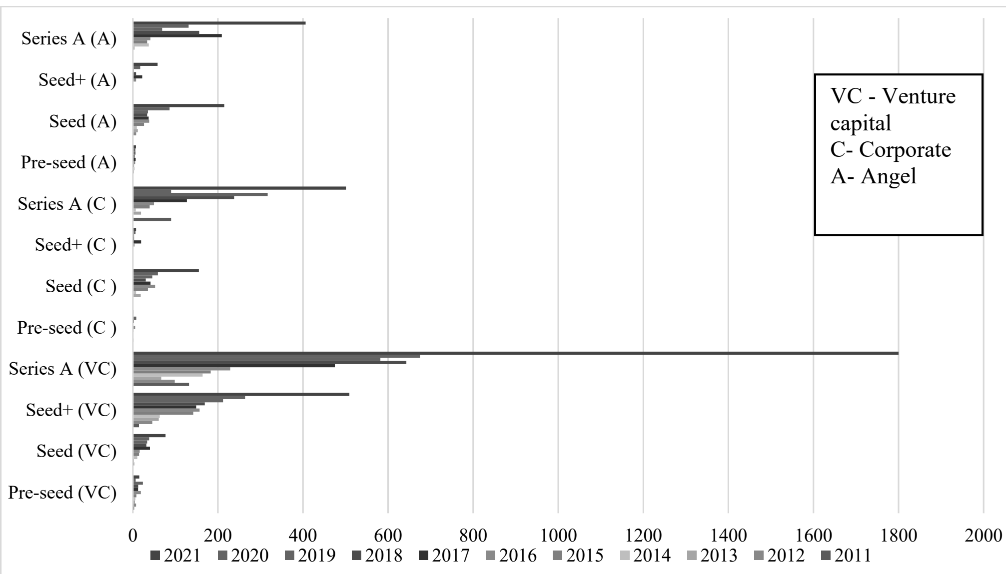

Fig. 7. Funding volumes of startups according to funding rounds and investors in Germany for 2011–2021 (million US dollars) developed by the authors based on [11]

The volume of financing in Ukraine at the initial rounds of financing (Pre-seed and Seed) is typical for venture capital, angels, and corporations, which reflects significant support for startups at the initial stages of the life cycle, which expands the opportunities for startups to receive financing without having an initial profit and a clearly defined target audience (Fig. 8). However, compared to Germany, there is a lack of funding by angels and corporations in round A. For corporations, financing in the second round is typical, which can also refer to the fact that the startup already has an idea that works. Cooperatives are interested in investing in a startup that may not have other investors.

With almost 200 deals over the past five quarters, it can see investor activity in the seed round. American and other foreign funds mainly invest in large rounds. An increasing number of startups are appearing, and most importantly, there are already 17 funds that are attracting new funds to their funds. Some have already raised, for example, Horizon Capital – almost \$300 million; Geek Ventures announced the end of collecting \$23 million for a new fund [14].

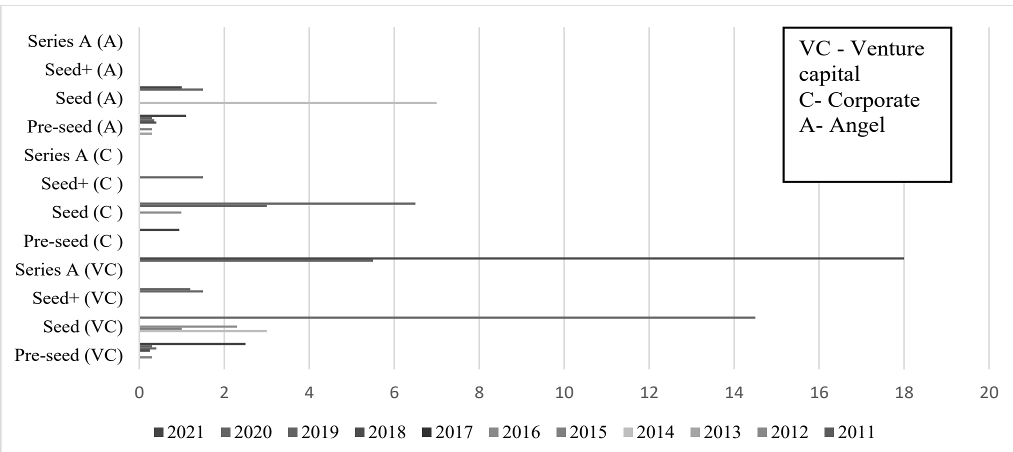

Fig. 8. Funding volumes of startups according to funding rounds and investors in Ukraine for 2011–2021 (million US dollars) developed by the authors based on [11]

During the final stage of the life cycle, startups move to the stage of creation of an active public company, sale of shares, or purchase of the startup by a large corporation. In most cases, at the final stage, the exit of venture capital investors takes place; the sale of a startup has a much higher price than when there were initial investments, which ensures that investors capture significant amounts of profit [15]. The exit stage in the development of startups, as practice shows and scientists note, can become a prerequisite for the creation of a new product, thereby confirming the cyclicality of startup projects as a specific pattern and a characteristic feature of startup entrepreneurship [16, p. 84].

The study of the factors of the post-COVID growth recovery of the Ukrainian economy by H. Yatsenko indicated that venture investments could become a significant impetus for innovative development. A significant drawback in the expansion of the venture system is the lack of an environment for the development of startups, which is a direct consequence of the spontaneous and poorly organized cluster movement and the absence of a single organization – the Single representative of clusters and cluster state programs [17, p. 62].

A vital prerequisite for improving the activity of venture capital funds in Ukraine is the improvement and approval of the draft Law of Ukraine "On Venture Activity in the Innovative Sphere" (from 2007), to additionally develop the rules for joint investment of venture capital funds and state funds, with the definition of the responsibilities of each of the parties, and also highlight the peculiarities of international funds in investing in domestic startups, taking into account the experience of developed countries.

Conclusions. At the initial stages of the startup life cycle, it is essential to attract financial resources in research, development, testing, and testing of the first samples, which is a significant risk for investors. Partial neutralization of the risks of insufficient funding at the initial stages can be achieved by influencing the creation of training infrastructure, incubation of startups, assistance to various funds that provide financial assistance or investments at the initial stages, assistance in the formation of experience exchange platforms, search for partners, organization of competitions, presentations of startups on levels of ideas. The experience of European countries shows that the organization of networks of business angels can become a solution to the problem of attracting investments, which is currently relevant for Ukraine. Young companies will have the opportunity to submit their projects to several investors with the help of networks of business angels, who, in turn, can review the proposed projects, maintaining anonymity until the moment of negotiations with a specific developer. To improve the survival of startups at the first stages of the life cycle, for Ukraine and Germany, expanding the types of investors is a promising direction. The diversity of investors can contribute to greater funding availability for startups and reduce the risks associated with a single source of investment. Ukraine and Germany have the potential to create various investment ecosystems that include both institutional investors and angel investors, corporate accelerators, and other types of financial support for startups. It will create favorable conditions for the development of innovative entrepreneurship and help increase the competitiveness of both countries on the world market.

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МОДЕЛІ ФІНАНСУВАННЯ СТАРТАПІВ НА ПРИКЛАДІ ПРИВАТНОГО СЕКТОРУ В НІМЕЧЧИНІ ТА УКРАЇНІ

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Анотація. У статті розглядається модель фінансування стартапів на початкових етапах життєвого циклу в Німеччині та Україні. Висвітлено особливості етапів життєвого циклу, типи інвесторів, що інвестують у стартапи, та раунди фінансування. Фінансування стартапів поділяється на зовнішнє (між двома сторонами є зобов'язання, підписані контракти) і внутрішнє (переважно це кошти засновників або безповоротна допомога близького оточення). Аналіз моделі фінансування в Німеччині та Україні дозволив визначити спільні ознаки; зокрема, корпорації, венчурний капітал і ангели займають найбільшу кількість інвесторів у загальній структурі. Корпоративний капітал також відіграє найважливішу роль у Німеччині щодо кількості фінансованих справ. Проте частка у загальній кількості профінансованих справ нижча, ніж в Україні. У чотирьох раундах фінансування венчурний капітал займає найбільші обсяги фінансування, на другому місці - ангели та корпорації, але лише в перших трьох раундах фінансування. На етапі серії A корпорації випереджають ангелів, стартапи на цьому етапі вже більш усталені, потребують менше консультаційних послуг (пропонованих ангелами) і, коли продукт/послуга вже випущено на ринок, стають більшими. привабливим для відомих компаній для розширення асортименту продукції. Аналіз фінансування в Україні за раундами показав, що найбільша частка фінансування припадає на початкові раунди, коли стартапи виходять на ринок зі своєю ідеєю. Для серії A інвестиції здійснюються лише венчурним капіталом. Ця тенденція підвищує ймовірність іноземних інвестицій у наступних раундах фінансування українських стартапів. У Німеччині всі види інвесторів інвестували найбільше в серію A за останні роки. Для обох моделей фінансування необхідно розширити диференціацію видів фінансування, що дозволить краще скорегувати забезпечення потреби стартапів у коштах у кожному з раундів фінансування та зменшити смертність стартапів на перших етапах життєвий цикл.

Ключові слова: стартап, модель фінансування стартапу в Німеччині, модель фінансування стартапу в Україні, приватний сектор, венчурний капітал, ангел, корпорація.