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Sino-Inno-Cap | White Paper 1

Literature Review on Corporate Venture Capital in China

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Project:

Corporate Venture Capital (CVC) as an innovation tool

for global technology leadership in China

Funded by the German Federal Ministry of Higher Education

Project #01DO21003B

Frankfurt, February 2022

Background

This report is part of a project “Corporate Venture Capital as an Innovation Tool for Global Technology Leadership in China” (“Sino-Inno-Cap”), funded by the German Federal Ministry of Higher Education in 2021. The team consists of researchers from the TH Aschaffenburg, led by Prof. Dr. Boris Bauke, and the Frankfurt School of Finance & Management, led by Prof. Dr. Horst Löchel.

Dominance in key industries of the future will be driven by disruptive innovation and platforms. The innovation type of existing companies is usually incremental, not disruptive, due to path dependencies and organizational rigidity (especially so in Germany). Disruptive innovation often requires new, autonomous entities that are supported by (Corporate) Venture Capital. China has recognized this and in a relatively short time taken the lead in the field of digital cross-cutting technology. Our project is supposed to help understand the emergence of venture capital-funded innovation in China and its potential impacts on the development of mutual investment policy between Europe and China. This might be an inspiration for the organization of innovation ecosystems in Germany and Europe, but it might also contribute to a better understanding of the increasing investment activity via Foreign Direct Investments (FDI) of, in particular, Chinese investments in German and European technology companies.

Corporate Venture Capital (CVC) has already reached a relatively mature stage globally. Although China has become the second-largest Venture Capital (VC) market in the world, Chinese CVC information provision remains underdeveloped and lacks academic attention despite its widespread adoption. This project’s first white paper is an overview of the English literature on Corporate Venture Capital in China. It will be complemented by a follow-up overview of the Chinese literature on the subject.

From wikipedia: “A ‘white paper’ is a report or guide that informs readers concisely about a complex issue and presents the issuing body's philosophy on the matter. It is meant to help readers understand an issue, solve a problem, or make a decision.” We hope you find this white paper useful. Please contact us for feedback or ideas for collaboration.

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1 Corporate Venture Capital: An Introduction[1]

1.1 Innovation in Corporations

Innovation plays an important role in many companies' business strategy. Large companies entering the mature stage of their life cycle often are troubled by various bottlenecks such as declining innovation capability, slowing development, and worsening conditions for transformation. Therefore, many firms turn towards entrepreneurial activities for a breakthrough (Wang & Pu, 2016). However, implementing an optimal innovation strategy remains a major challenge for every company. Examples of innovation practices include internal Research and Development, Mergers and Acquisitions, joint ventures or alliances, corporate venture capital, and accelerator programs (see Figure 1 below). The fields within the red polygon mark the subjects of our research project.

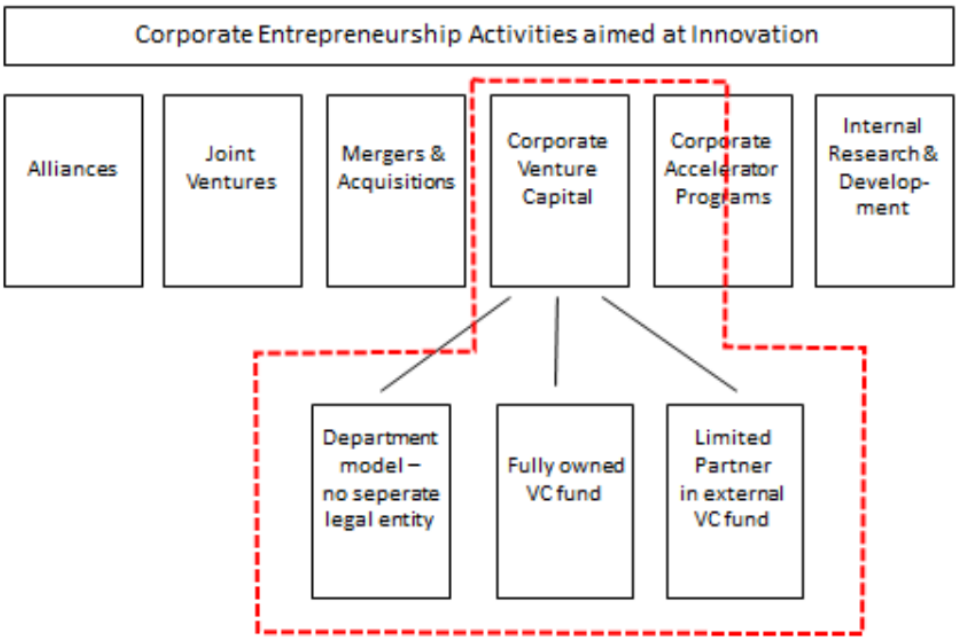

Figure 1: Corporate Entrepreneurship and CVC.

Source: Own Illustration.

An innovation strategy lays the foundation for a company's innovation system which adopts those innovation practices. In such a system, processes and structures are clearly defined to explore for new innovation opportunities, translate ideas into product designs,

[1] We thank Mark Aschmann, Jakob Otto, Maria Schuran and Jutta Annemarie Zeko of Frankfurt School Student Consulting for valuable research assistance.

and narrow down the projects receiving ultimately the funding. Correspondingly, a company's innovation system should be unique allowing a symbiosis between its innovation and business strategies. Therefore, a specific system does not fit optimally for other corporations (Pisano, 2016).

Additionally, governments have implemented innovation strategies at the country-level. For instance, countries may adopt horizontal policies to support all sectors, or vertical policies to target specific sectors. For example, the German development bank KfW provides promotional programmes for business start-ups. In China, the 'Innovation-Driven Development Strategy' (IDDS) was introduced in 2016, focusing on the so-called technology triangle, namely data, AI and communication. This specific policy is by far the most sophisticated one announced so far in China and might impact the Chinese society and economy significantly (Naughton, 2021). The present paper particularly focuses on how Corporate Venture Capital is used as a tool by corporations and the government to drive innovation in the field of technology.

1.2 Definition

We follow Dushnitsky, Yu & Lu (2020) and **define CVC as large non-financial organizations making minority investments in external and operationally independent start-ups.** This definition allows us to include all organizational forms of CVC depicted in Figure 1. We deliberately include the possibility that the investment is intermediated by a legally separate VC fund, in which the parent company might invest as an exclusive or non-exclusive Limited Partner. Given the strong role of the state in China, funds owned by the government might also be included in future analyses.

1.3 CVC size, strategies and actors

As a result, CVC has continuously gained relevance across all markets over recent years, as evidenced by global CVC-backed funding reaching $79bn in the first six months of 2021, surpassing the 2020 annual record of $74bn. Furthermore, exits – achieved through M&A operations or IPOs – have grown 95% YoY in the first half of 2021, reaching 438 in total numbers. A sharp rise in IPOs to 120 in the first two quarters of 2021 stands out as a 300% increase compared to 2020 (see Figure 2 below). Although the relevance of Asian start-ups has grown, 51% of all funding is still attracted by US-based start-ups (CB Insights Research, 2021).

Figure 1: Recent development of the global CVC market
Source: CB Insights, 2021.

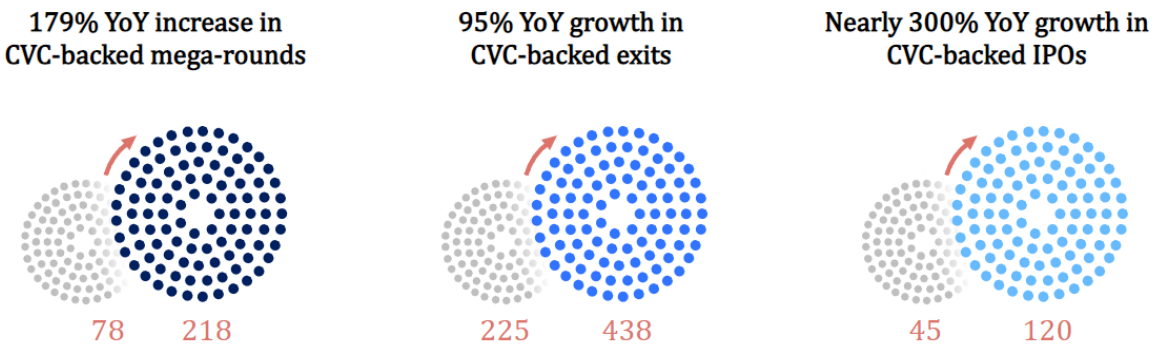

Figure 2: Recent Development of the Global CVC Market.
Source: CB Insights Research, 2021.

A CVC program may have a decisive impact on the business development of both investors and investees. Lerner (2013) states that the main positive impacts expected for the investing company are:

- It is a cheaper and quicker solution to gain insight into new possible technological fields by investing in a start-up. In addition, Hurry, Miller & Bowman (1992) mention that CVC offers the possibility for the parent company to acquire the venture's technology, capabilities, and resources via a contractual option. Accordingly, this helps the investor to react fast to market changes and enter into niche market segments which are captured more effectively by smaller start-ups compared to large corporations. By doing such external research and development, there is no need to spend time and capital for setting up an internal R&D department anymore.

- CVC investments are more flexible in terms of exiting unsuccessful investments. Should a CVC investment become unpromising, it is easier for the investing company to terminate the initiative than to close down its own internal research facility.

- Supporting an external venture could also help boost demand for the investing company's own products. For example, a start-up might need its investor's product to produce its own items.

- Companies with a CVC program can also benefit financially.

More recent literature states additional benefits:

- The investor can gain access to external networks and improve the social recognition on the market among other groups and further reduce search cost and transaction cost in light of CVC investments. With this advanced knowledge, the strategic alliance provides the CVC investor with new possible investment areas and grants the investor access to other start-up companies (Dushnitsky, Yu, & Lu, 2020).

- CVC investments also provide new beneficial resources that enhance the M&A effectiveness and efficiency. M&A and CVC activities share similarities in a target's evaluation and selection process. The engagement in CVC provides the investor with valuable knowledge about their respective industries. Materializing trends and rising technology levels improve the assessment process of the parent company. A deeper understanding of the factors mentioned above also significantly reduces the required due diligence process and enables more efficient M&A operations (Ma, 2020).

However, running a CVC program is a **challenging task** as described by Lerner (2013). In particular, the following risks have to be taken into account when making CVC investment decisions:

- If the parent company and the invested start-up do not share the same objectives, the investment decision often does not go well. In particular, CVC activities can experience inefficiency due to information dilemmas. Zheng, Hongxing & Wen (2018) put forward that the investee venture can refuse to disclose relevant intelligence caused by the investee's fear of opportunistic behavior from the parent company.

- A complex decision-making process could lead to untimely investment judgments missing great opportunities.

- It is crucial to set the compensations in a CVC program in a similar way to the salaries of venture capitalists. Otherwise, the parent company could lose its talent to other VC funds.

- The exchange of technological knowledge may not work properly between the venture and the parent company. There are many explanations for this: The start-up might be located very far away from the investing company. Alternatively, the technology might not be a good match with the investing company.

For venture companies, CVC offers the opportunity to secure funding for their innovation activities. If the parent company of the CVC has a strong technological match with the start-up, the investee company could utilize the investor's assets such as distribution channel, reputation, or manufacturing capability to further boost its business. The investee venture can even implement its investor's business procedures and culture (Chesbrough, 2002). On the other hand, CVC investors might exploit the investee venture, particularly when the venture and the parent company of the CVC compete in the same product market. For example, the parent company could create superior products derived from the R&D activities of the invested growth company, leading to cannibalization. Hellmann (2002) shows that entrepreneurs favor IVC over CVC for financing in such situations.

In terms of **organizational form**, CVC programs can be set up in various ways, which may be categorized in the following four modes (Rongzhongyanjiu, 2020):

- In a direct investment model, the parent company establishes an internal investment department to carry out the investment strategy and standardize the management of the subsidiaries. In this case, the department is not a separate legal entity.
- In the case of a wholly-owned subsidiary model, the parent company establishes and fully owns a separate legal entity as the investment and capital operations platform for the asset management of the parent company's investments.
- In case of the affiliate model, the parent company establishes a subsidiary in cooperation with a third-party, which conducts all the CVC investments of the parent company.
- External funds model refers to the parent company investing in external funds in the form of limited partnerships (LPs).

Each of the above-mentioned CVC models has its advantages and limitations. For example, the built-in direct investment department model can avoid the principal and agency-related problems related to intermediaries and strengthen the control of all investee businesses by the parent corporation. However, it lacks flexibility as CVC investments are funded off directly from the investor's balance sheet on a deal-by-deal basis. As a consequence, CVC activities from the parent company are more uncertain and depend on the fluctuation of the business cycles, corporate operating budgets and corporate priorities (Shibata, 2020). CVC tend to concentrate more on later-stage

investments (Asel et al., 2015). Conversely, research has highlighted that investors with dedicated, independently operated CVC entities instead of internal strategic departments evaluate start-ups more independently and objectively. The external investment units take more accountability for their investment performance. Even more so, an external CVC unit reduces the problem of overconfidence and principal-agent problems (Dushnitsky, Yu & Lu, 2020). However, Rongzhongyanjiu (2020) states that in the case of an external funds model, the investment process might be inefficient due to the multi-party decision-making process. Corporates might choose to syndicate financing with an external VC, in the form of becoming a Limited Partner. In this case, the strategic investor plays a more passive role and provides less other support to the venture while the VC is the active investor (Hellmann, 2002).

CVC investments are characterized by two dimensions: on the one hand the predominance of strategic versus financial objectives, and on the other hand, a loose link vis-a-vis tight connections between the investing corporate and the invested start-up. Around these dimensions, Chesbrough (2002) has broadly categorized four different **types of CVC investments:**

- *Driving investments* prioritize strategic objectives over financial returns and are typically characterized by a closer connection between the operations of the investor and the investee company.
- *Passive investments* aim for profits with a weak operational link between the investing company and the invested start-up.
- *Enabling investments* emphasize the strategic objectives of the investor with a loose operational connection to the investee company, the main rationale being complementarity.
- *Emergent investments* are thought to explore new business opportunities in areas with close operational synergy between the parent company and the start-up business.

Regarding the **strategic objective** of the parent company, a CVC can be differentiated as a horizontal or a vertical expansion. In a horizontal expansion, the investor finances investee ventures in a complementary industry. As a result, the company business reaches a higher level of diversification. In the case of a vertical expansion, the CVC investment is targeting upstream or downstream related start-ups based on the core

business of the investing company. An upstream investment is directly linked to controlling the supply of raw materials, services or other resources of service providers and thus influences production and transaction costs. Investing downstream can increase sales channels and expand the investors' core business scope (Rongzhongyanjiu, 2020). It is necessary for an investing company to have a clear understanding of its overall business strategy and operational capability before engaging in CVC activities.

1.4 CVC Portfolio Composition and its impact on Innovation

After discussing the details on the categories of different single CVC strategies on a firm-level basis, it is crucial to analyze the interactions of multiple CVC investments conducted by the parent company on a portfolio-level.

Vassolo et al. (2004) mention that the portfolio of ventures achieve a different performance compared to the sum of each alone. Further, Lin & Lee (2011) state that the configuration features of a CVC portfolio has an influence on the growth opportunities and firm value of the investing company. Particularly, industry diversification and a close vertical linkage between the parent company and the investee ventures has a positive impact on future growth value for the CVC investor.

Accordingly, the rise of novel technologies can be better captured by being involved in multiple industrial segments via portfolio diversification than by narrowly focusing the CVC investments on a few industrial sectors (Hurry et al., 1988). Vassolo et al. (2004) shows that investing in ventures that are in the same industry sector, leads to an aggregate growth value for the parent company that is lower than the sum of the growth values of each venture.

Lin & Lee (2011) also argue that investing vertically outperforms horizontal expansion. More diverse information about customers or other stakeholders can be accumulated if the parent company is aiming for downstream and upstream related ventures. On the contrary, the CVC investor would only gain redundant information in a horizontal investment. In addition, a vertical investment can result in the development of an ecosystem triggering innovation. Such a growth opportunity is usually not available in a horizontal investment.

In addition, the investment intensity also has an impact on the parent company’s growth value. Wan & Lu (2014) find a linear relation between the number of CVC investments in a portfolio and the innovation level of the CVC investor.

Therefore, it is also important to understand how to configure and allocate the investment budget in a CVC investment portfolio if the parent company plans to capture innovation via CVC.

1.5 Difference between CVC and other forms of Venture Capital (VC)

In addition to CVC there are other forms of venture capital like the already-mentioned independent venture capital (IVC), state-owned enterprise-affiliated venture capital (GVC), university endowment (UVC), and so on. Chen et al. (2021) find that a VC's affiliation affects the business model in terms of what type of industries the fund invests in, what kind of companies are funded, and others. IVC is the most widely used form in China (Chen et al., 2021). Chemmanur, Loutskina, & Tian (2014) mention that as elsewhere, it is usually set up as a limited partnership and generally framed by a contractually limited investment time horizon of ten years. In contrast, CVC funding units are mostly arranged as subsidiaries of an investing company. As a consequence, CVCs have a longer investment horizon than IVCs. IVC funds have the only investment goal to maximize the investment yield, while CVC's investments need to find a balance between strategic and financial objectives. Additionally, the compensation structure differs between IVC and CVC. IVC funds typically have a "2-and-20" fee structure with IVC managers charging a 2% fee on the assets under management and can charge another 20% on any profits that exceed the pre-defined hurdle rate of the investments. On the other hand, CVC fund managers receive a fixed salary and a bonus that depends on the business performance of the parent company.

Due to these striking differences, Chemmanur, Loutskina, & Tian (2014) argue that CVCs are willing to experiment and have a higher fault tolerance compared to IVC. Furthermore, CVCs with their corporate parents possess distinctive industry information and technology used by the portfolio ventures, particularly if the start-ups have a close operational link to their investor's parent company. As a result, CVCs are superior in selecting ventures with higher innovation prospects and can thereafter more effectively foster innovation in their portfolio ventures.

According to Chemmanur, Loutskina, & Tian (2014), CVC-backed start-ups generate more patents and receive more citations in the three years leading up to an IPO than IVC-backed start-ups. Similarly, Lee (2021) finds that CVC-backed start-ups in China have a higher innovation productivity compared to firms without receiving CVC financing.

Next to the innovation productivity, key differences in IPO performance between CVC funded companies and those funded by IVC become visible. Gompers & Lerner (1999) show that companies with CVC investments receive higher stock prices and market valuations over different investment rounds than those without CVC investments. In this way, more financial benefits are created for the enterprises and investors. Zheng, Hongxing & Wen (2018) shows that IPO underpricing is more significant for enterprises without CVC investment than those funded by CVC. After 5 years post-IPO, CVC-backed ventures' profitability is statistically insignificant compared to the IVC-backed ventures (Chemmanur, Loutskina, & Tian, 2014).

Chemmanur, Loutskina, & Tian (2014) provide a justification for why IVC and CVC can co-exist in the venture capital industry. They claim that IVC outperforms CVC if the technological fit between the involved CVC parent company and the investee venture is weak. Additionally, as IVC fund managers' remuneration depends on financial performance rather than on strategic objectives, they have no motivation to exploit their portfolio ventures. These underlying dissimilarities between CVCs and IVCs profoundly impact the outcomes of their respective investments.

The next section provides an overview of the Chinese CVC market and highlights its structure, regulatory environment and general developments.

2 CVC in China

China has seen an exceptional period of high growth rates over the past four decades. However, traditional drivers of this growth are getting exhausted and GDP growth has been slowing down in recent years. Faced by a rapid demographic aging and declining returns to public investments, China is required to develop new drivers of growth alongside more efficient resource allocation. This is challenged by the need to reduce environmental impacts while increasing productivity simultaneously (World Bank, 2019). Hence, China is currently undergoing a major transformation and plans to upgrade or digitalise its manufacturing industries in order to unlock such new drivers.

With the introduction of the Chinese fourteenth five-year plan and the so-called "Innovation-Driven Development Strategy" (IDDS), an increased focus on industrialization, including expanding 5G and other communication infrastructures and more efficient manufacturing processes has been set. In addition, this particular social

and economic development initiative issued by the Chinese government states that China must strengthen innovation, especially in IoT, extensive data analysis, AI, blockchain and sustainability. The fourteenth five-year plan reads that value chains should be exposed to more innovation in all aspects. In addition, emerging markets are to be embraced, and the transformation of traditional markets is to be promoted, leading to further desires for innovation and entrepreneurial approaches. The governmental urge to pursue innovation may be a catalyst in CVCs pursuing investment opportunities more aggressively and to a greater extent. Because such developments require significant capital expenditure and may lead to new markets and technological advancements, increasing demand for venture capital and allowing CVCs to leverage emerging technologies of young start-ups (Zhonghong Guoyan Information Technology Research Institute, 2020).

2.1 Current state

In the late 1970s, the Chinese government began to moderate restrictions on the economy and private institutions, leading to a vast increase in investment. As a result, over one million privately owned institutions were created between 1979 and 1999, with general venture capital rapidly gaining relevance in the Chinese market during this period. Initially, investors targeted low technology sectors like hotel facilities which offered a lower risk profile. This contradicted the demands set by the Chinese government, which wanted high tech and infrastructure projects to be supported (Ahlstrom, Bruton, & Yeh, 2007). According to Fujishiro (2018), the largest investors of Chinese VC companies in 2016 were government institutions and state-owned enterprises (35%), institutional investors in the private sector (14%), individuals (12%), and mixed-ownership enterprises (5%). CVC began to flourish only in the late 1990s when the government began to fund the venture capital firms, consequently experiencing four stages of development: (1) budding stage between 1998 and 2009, (2) substantial development stage between 2010 and 2012, (3) rapid expansion between 2013 and 2016, and (4) an adjustment period from 2016 onwards (Rongzhongyanjiu, 2020).

Following the development of the global CVC market, the CVC investment activity in China has accelerated in the first half of 2021, with a 54% YoY increase in deal count and a 100% YoY increase in investment funding. As a result, 2021 is on track to surpass the previous all-time highs set in 2018. A 47% YoY increase in the number of mega-rounds, which are investment deals where a start-up can raise more than $100m, is further

evidence of the exceptionally increasing relevance of CVC in the Chinese market (CB Insights Research, 2021).

The analysis of the annual Chinese CVC report by Rongzhongyanjiu (2020) shows that as of June 2020, 727 Chinese CVC institutions had been established and contributed 20% to the Chinese venture capital market in terms of invested capital. Most CVCs are geographically concentrated in Beijing (35%), Guangdong (20%) and Shanghai (14%), with these three locations accounting for roughly ⅔ of Chinese CVCs (Rongzhongyanjiu, 2020). Research generally categorizes the market into traditional industry CVCs, internet-affiliated CVCs and unicorn CVCs, where a start-up is valued at $1bn or higher. Of the 727 Chinese CVCs, 60% are affiliated with traditional industries, 37% have an internet focus, and less than 3% are unicorn CVCs (see Figure 3 below). The growing number of Chinese unicorns since 2014 might also have a positive effect on the investment climate. In the meantime, the number of unicorns in the USA stagnated (Bock & Hackober, 2020).

According to Rongzhongyanjiu (2020), China continues to rely on the booming internet sector, reflected by CVC investments in technological industries such as internet technologies, telecommunications, entertainment and media. In 2020, the most dominant and active CVC parent companies in China represent internet companies:

- Tencent Holdings Ltd.,
- Alibaba Group Holding Ltd.,
- Ant Group Co., Ltd.,
- JD.com Inc.,
- Xiaomi Inc.,
- NetEase, Inc.,
- ByteDance Ltd., and
- Greenland Holdings Corp., Ltd.

Accordingly, these tech giants have internet start-ups as their preferred investment targets and form an oligopoly in China’s CVC market. The market share of these companies grew from 34% in 2019 to 41% investment volume in 2020. Of the ten most significant investment events in 2019, nine were occupied by internet-affiliated CVCs. The current proportion of investments that lie outside the core business area of the investor was less than 10% (Rongzhongyanjiu, 2020).

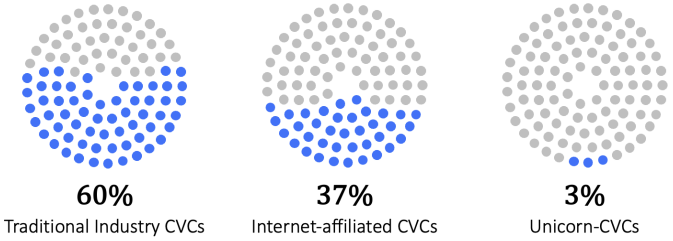

Figure 3: Proportion of Chinese CVC funds based on industry.
Source: Rongzhongyanjiu, 2020.

The Covid-19 pandemic has negatively affected the Chinese CVC market, leading to a decline in both frequency and amount of investment in the first half of 2020 by 17% and 35%, respectively. However, amid the depressed economy of early 2020, CVC investment activity was significantly higher than IVCs as leading CVC institutions such as Tencent Investment and the Xiaomi Group were more risk-tolerant and instead expanded their investments under the effects of the epidemic, with both their investment frequency and the amount they invested increasing year-on-year (Rongzhongyanjiu, 2020). Rongzhongyanjiu (2020) argues that information technology, consumer goods and information transmission, software, and IT services are the most critical industries in which CVC facilities are located in China. The number of CVC institutions in information technology accounted for 59.7% of the total CVC institutions. This sector is the largest as technology transformations can be realized in digitization and innovation in various industrial sectors. The number of CVC institutions in the consumer goods sector came in second because this industry sector is closely related to daily life and the diversified investments improve the breadth of one's business and the ability to avoid risks. In addition, the sustainable development and expansion of the company can be promoted in this way.

2.2 Chinese policy frameworks and regulation influencing the CVC market

Organizing economic activities of the society in China depends on the invisible hand (the market) and a visible hand (government intervention or guidance) (Ran, 2017). As such, according to Ahlstrom, Bruton & Yeh (2007), the state and its state-owned enterprises (SOE) are the largest employers and control important industries like financial services, power and telecommunications. SOEs have a degree of managerial autonomy with the idea that they implement government policies while remaining stable and agile. For many officials and policymakers, successful private companies can pose challenges and

increase competition for SOEs, and private companies create less social welfare compared to SOEs. Supported by the government policies in favor of state-owned enterprises and government VC funds is becoming increasingly dominant in China, often in the form of Corporate Venture Capital. For example, Dushnitsky, Yu, & Lu (2020) note that most SOEs set up either some kind of venture capital subsidiaries or venture capital funds, thereby creating so-called GVCs. Their organizational structure and process of the investments adopted are also quite similar to private companies. These GVC are mostly active in industries such as the Chinese mobile sector, merchant activities, and poly real estate. Furthermore, Suchard, Humphery-Jenner & Cao (2021) find that investee ventures backed partially by the government or the SOEs have a higher probability of a successful exit, mainly through an IPO in mainland China. In terms of the exit timing, these start-ups are more flexible than private VCs when it comes to exiting during a period of political uncertainty or bearing market conditions. However, a fully state-owned VC is not more likely to exit the portfolio venture, suggesting a greater inefficiency in the investment decision-making.

With regards to government policies, the government can sometimes impose taxes or fees on private companies that can be seen as a penalty for their political and economic interests (Ahlstrom, Bruton, & Yeh, 2007). The reason is that the government wants to trigger start-up innovation and protect competition since the current oligopolistic situation may reduce CVC activities and therefore also innovation (Guo & Wen, 2019). For example, the Chinese government recently cracked down on prominent tech giants during the corona pandemic. One of the state's objectives is to prevent the practice of incorporating start-ups into the parent company's tech ecosystem, which could make the investing company even larger and pose a greater threat to China's economy and social system. Because of joining a parent company's ecosystem, the investee venture is restricted in its decision-making. To illustrate, affected start-ups in such a situation can only use their parent company's payment and social media platforms, which can obstruct their long-term success (Li, 2021).

The Chinese government has recently taken prominent tech giants under scrutiny. Market observers expect the practice of incorporating a start-up into more extensive cooperation of the CVCs parent company to become less common. This and other changes might heavily alter the Chinese start-up investment market, but this is unlikely to force CVCs out of existence. Nevertheless, the government still encourages investments, aiming to promote the vital role of corporate investors in the Chinese and Asian start-up markets.

These policies are foreseeable to stimulate innovation yet restrict large tech companies from escaping out of government control (Li, 2021).

2.3 International dimension and stages

Chinese investments also take place outside China: Investments into US start-ups have experienced triple-digit growth rate over 2010-2017. This is unsurprising as there are many benefits to being part of the American innovation system. Chinese-based companies conduct foreign direct investments via CVC due to strategic motivations (Soloveva, Yamini & Wei, 2020). For example, Chinese companies will be able to obtain the technology of the American start-ups and can utilize it for the Chinese market. Among Chinese foreign direct investments into the United States, VC funds account for 78% and CVCs for just 22% of the investment activity (Gonzales Ohara 2018). However, recently, Chinese acquisitions in the US decreased immensely compared to the previous years. Beijing's regulatory breakdown on outbound capital flows contributed significantly to this decline. In addition, growing regulatory hurdles for Chinese investors in the United States regarding approval by the Committee on Foreign Investment in the United States (CFIUS) decreased acquisitions (Gonzales & Ohara, 2018).

CVC investments tend to be more flexible in terms of investment stages and rounds, targeting the realization of group or parent company strategies, with investments at all stages and across the industry chains. China's CVC institutions support a lower percentage of seed round projects compared to the global level, and invest even less in seed projects with no funding history. They mainly focus on series A and B, and do not shy away from spending money on quality late-stage projects (Zhu, 2020). Figure 4 highlights the five most prominent future directions of Chinese CVC.

Figure 4: Focus of future Chinese CVC investments.
Source: Zhu, 2020 (translated).

2.4 Difference between the Chinese and US VC markets

China's CVC market has evolved rapidly in recent years, and has evolved according to its specific institutional circumstances. As such, the market is dissimilar to the American VC market: Ahlstrom, Bruton & Yeh (2007) show that in North America, venture capital is mostly structured as limited partnerships. The limited partners are often rich individuals, endowments, pension funds and corporations, while Chinese VC funds - at least until about 2005 - were most often backed by banks and corporations. GPs need to adapt to local circumstances as China itself is regulated by different frameworks in different regions. This is defined as "Chinese style federalism" by Ahlstrom, Bruton & Yeh (2007). Tax rates are often different in different provinces impacting the fund domicile of VC funds. This Chinese regionalism is also affecting the prospects of high-tech companies. Different regional markets might have different requirements for the venture's products.

Ahlstrom et al. (2007) show that once the VC funds have been set up, corporate sponsors are confronted with weak information exchange with Chinese entrepreneurs. For investors, it is challenging to find out which venture is reliable and is a good funding opportunity. Hence, these financiers need to put more effort into discovering good investment targets by building a strong personal relationship with key individuals in the VC market. In China, this is termed as creating good "Guanxi" with the powerful people. Although networking is also important in the American VC market, in China it is crucial to have a good relationship with the responsible government officials, too.

Furthermore, Guanxi might not be sufficient for a successful VC investment in China due to the lack of important information such as accurate financial data of the promising venture target. One of the major reasons is that the Chinese accounting standards differ from the international accounting framework. Not only that, but Chinese entrepreneurs might also determine a higher value for their ventures when comparing their enterprise with their US counterparts, taking into account higher Chinese national growth rates. In particular, for foreign VC investors, this could be disadvantageous as the country-specific risk cannot be fully incorporated in the valuation.

The VC investor also needs to negotiate on the corporate governance structure at the venture. Gaining a good level of control over the investee venture is often a difficult task. Additionally, it is harder to appoint its own staff to join the company management than in the US VC market.

For CVC and VC investors alike it is crucial to monitor the investee's business development. Some venture capitalists claim that they have a lower number of investments in their portfolio due to the strong monitoring efforts needed in China compared to the US, and they advise locating their offices closer to their investee ventures. Wang, Yang & An (2021) mention that the geographical distance between the parent company and its invested venture has a positive impact on the values of both firms.

Lastly, it might not be easy for any VC investors to keep an investee venture in the portfolio for the long term, as IPOs are a more cumbersome process than in the US. This increases the unsystematic risk for VCs, making the risky environment of venture capital investments even more challenging. One recent example is the governmental crackdown of Didi in 2021 (see McMorrow 2021). Another example is that not every Chinese firm can go public as it plans to do so, illustrated by the unsuccessful IPO of the firm Ant Financial (see McMorrow 2020). Zhang (2011) proposed reforms for listing companies as the accessibility of stock markets as an exit option is crucial for the development of China's VC sector. The Chinese government has recently implemented an American-Style registration system for public listings to address this issue (Zhang & An, 2020).

The VC market continues to mature in China. Not least this might be driven by less data protection laws for domestic use. Fujishiro (2018) states that data can be collected easier and used for the development of products of high-technology firms - which might lead to more innovation.

3 Conclusion

In China, CVC is a significant player, conducting minority investments in privately-owned entrepreneurial ventures, harvesting a "window to technology" (Dushnitsky & Lenox, 2006). Good examples for such companies are Alibaba and JD, with their corresponding VC investment funds. As external learning is a compelling reason for CVC investments, it is often used by firms to conquer the constraints of internal innovation and maintain profitability (Dushnitsky & Lenox, 2005). Combined with the rapid growth of several industries in China over the past years, CVC has proven to be a vital tool for promoting access to new technologies and trends, as evidenced by several key players that account for most of the CVC investment activity.

A recent World Bank Group report (WBG, 2019) finds that the following "three Ds" need to be addressed for tackling China's productivity constraints:

- **Distortions** to be removed in the resource allocation of the economy,
- **Diffusion** of existing and advanced technologies or innovations to be accelerated, and
- **Discovery** of new technologies, products or processes to be encouraged to promote market expansion.

Accordingly, the same report suggests the following seven approaches addressing the "three D's":

- Enhancing competition and establishing a level playing field for all investors,
- Reorganizing the Chinese innovation system,
- Establishing human capital,
- Optimizing the distribution of financial and human resources,
- Taking advantage of regional development and integration,
- Encouraging economic globalization, and
- Enhancing international competitiveness and adapting regulation and governance models to adjust the balance between the state and the market.

Unleashing new growth drivers requires continuous reforms to boost innovation and productivity in return. The role of the Chinese state needs to evolve and highlight measures that will provide stable market expectations, a transparent and fair business environment, invigorate the regulatory system and the rule of law, and amend the management of civil service performance to nurture the market system further.

This paper aimed to provide an overview of the Chinese CVC market and, in particular, to highlight its structure, regulatory environment, and general developments. At least in the English-spoken world, not much is known about the role of corporate venture capital in the rise of Chinese technology firms and the development of the Chinese innovation system. We found many open questions that we plan to address in the coming months and years, such as:

- How does the role of government in VC / CVC funding differ between Germany and China, and the US? (Comparing the KfW and the High-Tech-Gründerfonds and Chinese guiding funds.)

- What is the role of guided funds for the Chinese innovation system and how do they work?
- Do investments between CVC and independent VCs differ in China? Are there performance differences between them in China, and if yes, what drives them?
- What explains the choice between “inhouse” CVC activities and investments in independent VC funds? Which is the more successful approach?
- What drives the choice between “normal” M&A and CVC investments in international “brown field” expansion?
- What are the drivers and the role of the current hard-handed regulation of big tech firms in China? Will this lead to more start-up activity (and quality) or to less?

We are looking forward to understanding the Chinese innovation system and especially its CVC component better with the help of this research project!

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