Linear Capital - 2023Q4 Newsletter

Jan 31, 2024

Dear Friends,

Thank you for being supportive along the way. We are very glad to present this letter to summarize our quarterly activities in Q4 2023.

--- Observation and Insights ---

For this quarter's management letter, we have decided to experiment with a new approach by adopting a Q&A format to address some of the pertinent concerns raised by stakeholders, inspired by a conversation with a respected LP.

Question 1: What is the projected outlook for the revival of the Chinese economy in 2024? Will it exhibit improvements compared to 2023, deteriorate further, or remain relatively stable? What are the key determinants underlying this assessment?

Answer: I believe the economic conditions in the first half of 2024 will likely be similar to those of 2023. However, changes may emerge in the latter half of 2024, particularly toward the year's end. Therefore, we're preparing for a scenario where the overall economic landscape in 2024 might not show significant improvements from 2023. My assessment is based on the following factors:

1. First, internal factors require China to implement two strategic approaches:

- The first approach involves strengthening supportive policies, such as incentives in the real estate sector. This could include removing purchasing restrictions or providing financial support. Currently, these initiatives seem somewhat ineffective. Likewise, fiscal assistance to businesses isn't as proactive as it should be. Aside from car purchases, people seem hesitant to make significant expenses, especially in real estate. Interestingly, savings are increasing each quarter, suggesting that people have disposable income but are reluctant to spend it.

- The second approach requires careful implementation of regulatory policies. It's crucial for the Chinese government to act wisely when enacting these measures. Recent policies targeting the gaming industry have provoked significant responses. Given the current situation, such policies quickly recall memories of excessive regulation in online education and real estate sectors. Therefore, the Chinese government must develop practical policies that encourage recovery, while allowing enough time to harness the "invisible hand" of market regulation. This approach will help revive entrepreneurial spirit among Chinese business owners. Considering these factors, we expect the government to take a more proactive stance in supportive policies, while maintaining caution in regulatory actions.

2. Next, let's consider the external factors at play. There are two significant external factors concerning the United States worth noting:

- Firstly, the United States may begin to cut interest rates. The Federal Reserve might start this process in the first half of the year. This will undoubtedly have a significant impact on the stock and primary markets.

- Secondly, the outcome of the US election in November will also impact the Chinese market. Given Trump's business background and Biden's diplomatic skills, their respective victories could shape alliances differently. If Trump is re-elected, European support for the US might waver. On the other hand, Biden could potentially strengthen US ties with European allies. A Trump presidency might prompt Europe to lean towards economic self-sufficiency and enhance economic and trade cooperation with China. This scenario could provide an opportunity to combine European technology with Chinese manufacturing, promoting collaborative global business ventures.

- The outcome of the Taiwanese election will undoubtedly add complexity to the geopolitical landscape around China. However, as long as Taiwan does not declare independence, the chances of China initiating a conflict remain low. Any such action would likely do more harm than good for China. Unless unexpected extreme events occur, it's improbable that China and the US will face significant conflicts in the upcoming years.

- In the Yangtze River Delta and Pearl River Delta regions, local governments adopt a pragmatic approach. They proactively attract investments to stimulate economic development.

Clearly, numerous factors require our attention this year. So, as we prepare for 2024, which might not improve upon 2023, it's important to devise strategies both proactively and cautiously. This approach is likely the best way to manage expectations.

Question 2: What factors need to be addressed to restore everyone's confidence?

Answer: I believe that the fundamental confidence of everyone remains intact. The robust capabilities of China's supply chain and manufacturing industry, the talent accumulated over the past 30 years, the skilled labor force, a multitude of reliable engineers, and the proactive and responsible work ethics of the Chinese people haven't shown a systematic loss. Therefore, the issue of confidence is more of a short-term nature. However, a short-term loss in confidence can trigger a chain reaction; decreased confidence can lead to poorer economic performance, which in turn further undermines confidence and discourages investment. At this juncture, it becomes even more important for the government to implement proactive stimulus policies and avoid negative control measures. As long as the government can pragmatically adopt the strategy focused on economic development, entrepreneurs will continue to **adapt** to changes in the business environment through innovation. Next, let's discuss potential solutions, using the example of concerns around the relocation of the supply chain.

- I believe the relocation of the supply chain is inevitable, leading to a major reshuffling. Several industries, particularly low-end manufacturing, may witness a shift of 20% to 40%. The primary drivers include cost factors, diversification of the supply chain, and geopolitical pressures. Nonetheless, numerous mid-to-high-end supply chains and terminal brands will gradually surface, with their export methods evolving as well.

- China's branded, tech-focused products are gradually being superseded by a new generation of tech entrepreneurs. These individuals bring learning abilities, international perspectives, and **adaptability.** Examples of such companies include Li Auto and XPeng in the electric vehicle industry, as well as Insta360, Anker, Laifen, and our investments like Kujiale and Airgram. BYD is an example of a company led by experienced entrepreneurs. The number of such companies with international businesses is on the rise.

- Another trend is the Direct-to-Consumer (D2C) approach. Here, high-tech brand products are directly exported and internet channels are established overseas. This method also leverages mature operational models in China to directly reach consumers. The previous model relied mainly on traditional export trade, where goods were packed and shipped. Brand and distribution issues were handled by importers in the target country.

Therefore, entrepreneurs who can **adapt** to this change will take advantage of the opportunity for industry upgrading. They can sell branded and technologically advanced goods overseas using new methods. Most founders from Linear's portfolio express a positive outlook during our communications. Despite acknowledging this year's challenges, they remain hopeful for economic improvement and continue to actively strive. As long as everyone perseveres through this difficult period, there's a chance for market recovery.

Question 3: The current promotion of *Common Prosperity* may limit companies' profitability. Do the entrepreneurs you invest in feel hesitant about expanding their companies?

Answer: In the technology investment field, monopolistic interests don't necessarily benefit investors. This is because rapid expansion and achieving a monopoly position are challenging due to the lack of "viral spread" and network effects in technological innovation. Moreover, the way technology realizes value aligns well with the concept of "*Common Prosperity* ". Often, technology companies generate a value of 10 dollars for customers, retaining just 2-3 dollars for themselves. This business model benefits clients more, while the company takes a smaller share. The government strongly backs such technology-driven companies. Agile Robots and Horizon Robotics are examples of companies that have received substantial government support.

Question 4: What is the outlook for the entire Private Equity/Venture Capital market in 2024? What will the investment pace be like in 2024?

Answer: As for the outlook of the PE/VC market in 2024, I predict that the investment pace will probably not surpass that of the previous year. We are likely to maintain a similar pace unless there are substantial changes in the latter half of the year, which are not apparent at this time. Considering the current situation, I see no compelling reasons to accelerate the investment pace.

- In the field of artificial intelligence (AI), particularly in investing in large-scale models, I believe that start-up companies in China face limited opportunities due to less efficient capital. Nonetheless, certain uses of large language models (LLM) warrant consideration, albeit with caution.

- Sectors like new materials, new energy, and emerging manufacturing, which include robotics and synthetic biology, continue to receive steady funding, backed by strong government support. These fields represent China's strengths, and successful ventures in these areas could serve global markets, including China.

- Furthermore, this might be a good time to reassess B/C round companies that were previously overlooked but have shown promising growth prospects. Such a reassessment could potentially offer opportunities for selective investment.

Question 5: What are your expectations for returns on technology deals?

Answer: Typically, for technology deals, well-performing companies can expect an annual increase equal to the investment cost. However, instances like Agile Robots, which achieved nearly 100x returns within five years, are exceedingly rare. The overall risk of losses in technology projects is lower than in the internet sector. This is because, even if a deal fails, unique technology could still potentially be sold.

Question 6: Do you think fundraising prospects will improve or worsen in 2024 compared to 2023?

Answer: The prospect of fundraising improvement in 2024, as compared to 2023, appears low. It may not be until 2025 that we see some enhancement. As a result of the various factors between China and the United States previously mentioned, LPs are likely to be more cautious in their investments this year. However, once the Chinese economy starts its recovery and shows growth potential, overseas investors may be drawn by the potential returns and thus increase their investments in China. Nevertheless, this scenario is not anticipated to occur this year.

Question 7: What is your view on the IPO window for mainland Chinese companies in the United States and Hong Kong in 2024?

Answer: The probability of a systematic opening for IPOs of Mainland China's companies in the United States and Hong Kong in 2024 is low. The Hong Kong market has not demonstrated a significant improvement in liquidity. As a result, companies should prioritize their own business development. They should boost their internal growth capabilities, enhance self-sustainability, and establish high-quality business models. Only with these steps will they stand a chance of a successful public offering when the capital market environment improves.

Question 8: What is the most important advice for Linear's portfolio companies currently?

Answer: Prioritize cash flow management and commercialization processes, particularly for companies already selling products. In recent years, with a favorable capital environment, the focus was typically on demonstrating technological abilities, followed by contract value, financial revenue and cost, and then cash flow. However, now we require a tight synchronization between swift iterations of technological capabilities and the pace of commercialization. This helps to avoid premature or excessive development of technologies that may not bring immediate results for customers. Regarding financial management, the new order of priority should be cash flow management, financial revenue and cost, and then contract value.

Launching the era of "Expansion from China", we aim to leverage China's manufacturing prowess and talent pool. Our objective is to accelerate the transition of technology into products, create cost-effective high-tech products and services, and strategically penetrate global markets.

Question 9: What is your perspective on valuations? Does the impact on valuations vary across different sectors?

Answer: Indeed, valuation impacts vary across different sectors. For instance, in sectors such as synthetic biology and robotics, the market continues to favor these companies to a certain extent, as long as their products enter mass production. Companies like Yuansuan and Agile Robots have set ambitious growth targets for this year. This explains why sectors with strong growth potential, like these, continue to draw investments. These companies can secure investments in either USD or RMB.

We are also practical. If a financing round is favorable, we might consider selling some of our secondary shares. We've learned from the past three years that successful secondary share sales typically occur during good financing rounds. Hence, we're planning to sell secondary shares from a few of our portfolio companies.

At present, most company valuations are discounted. Early-stage companies typically have a 50% discount, while late-stage companies commonly offer 50%-70% off. The most fortunate companies are those that currently do not require financial funding.

Question 10: Does the Q4 2023 quarterly report show any significant increase or decline in valuation?

Answer: The major change in the Q4 2023 quarterly report is the adjustment of Sensors Data's valuation from $1.7 billion to $1 billion. This resulted in a nearly $30 million decrease in the book value of our USD Fund I. There were no significant markdowns in the valuations of other funds. However, a substantial increase in valuations is also unlikely in the upcoming months. We will continue to closely monitor each company. If significant changes occur in their financial or business status, we will adjust their valuations proactively.

Question 11: What are your expectations for the fundamental aspects of portfolio companies in 2024?

In our recent portfolio review, we assessed 118 active enterprises in which we have invested. Setting aside 16 new investments, our focus was on 102 companies. Among these, 74 companies, or 72.5% of the total, experienced revenue growth in 2023 compared to 2022. However, only 6 companies, approximately 6% of the total, met or exceeded their forecast for 2023, which was set at the beginning of that year.

However, companies in the Software as a Service (SaaS) industry are facing challenges due to the macroeconomic situation. This has resulted in modest revenue growth for Chinese SaaS enterprises. Despite these challenges, Chinese SaaS companies are shifting their focus to international expansion. Key markets for this expansion include Japan, South Korea, and Southeast Asia, primarily due to their accessibility. The ultimate goal, however, is to enter the European and US markets due to their greater potential.

This strategy is based on the lack of strong domestic competition in these overseas markets. For instance, companies like Thinking Data or Kujiale are considered top-tier products globally in their respective sectors, making them attractive to overseas customers.

Currently, portfolio companies in other sectors such as robotics, new energy, new materials, and synthetic biology all appear to be healthy and stable.

However, in the current market landscape, securing financing remains a significant and pervasive challenge. Only those companies that can demonstrate actual revenue generation or present compelling revenue projections have a chance of successfully securing subsequent funding.

Question 12: Where do you anticipate spending more time in 2024 - fundraising, investing, managing investments, or overseeing exits?

Answer: In general, the team will continue to focus on exploring new investment opportunities and managing portfolio companies. Given the current market conditions, we are emphasizing the identification of undervalued, top-tier technological innovation opportunities. At the same time, we are committed to helping our existing investments navigate future challenges more effectively.

In 2024, my primary focus will likely be on exits, specifically achieving effective exits or trade sales of shares of mature portfolio companies. Additionally, team management is crucial. I plan to unify the team's game plan, boost morale, and ensure well-organized investment and post-deal management. Notably, I will pay special attention to outstanding team members and optimize the team structure. After all, it's through significant challenges that the courage and brilliance of talented individuals truly **adapt** and shine.

Question 13: Which sectors do you predict will outperform in 2024, and which ones do you think will underperform?

In the field of artificial intelligence, we can anticipate more practical breakthroughs this year. In the U.S., the rapid development of text, image, and video content generation and processing is evident. I predict that in China, these applications will be tightly integrated with existing products. Take Feishu as an example, it hasn't yet implemented large-scale applications in this area, but I foresee that with the introduction of new versions, Feishu will gradually incorporate AI capabilities to enhance its paid services.

In China, artificial general intelligence (AGI) will likely be more deeply embedded into products, as standalone products struggle to overcome the initial hurdle. Chinese companies, in contrast to their American counterparts, are not as proactive in applying AGI, which could be attributed to budget constraints or a passive mentality of "if others haven't started adopting it, I won't either." However, certain sectors, like legal technology, are already making breakthroughs. Case in point, Powerlaw AI, a company we've invested in adopting AIGC technology into legal industry, has seen a significant increase in revenue over the past year.

China is a powerhouse in manufacturing, production, and construction. As such, there are extensive opportunities for integrating AI with robotic software and hardware across various sectors. The market is receptive to this and is willing to explore it.

While we do invest in green technology, our primary interest is in the performance enhancement and cost reduction that this technology offers. We concentrate on investing in innovative technologies, like using industrial carbon waste to produce bricks that are more environment-friendly, cost-effective, and high-performing. Labeling these technologies as "green" not only aids in marketing, but also boosts product sales.

Question 14: Will consumer sector outperform or underperform?

Answer: I believe that companies in the consumer sector likely to outperform are those with technological value-add characteristics. This is particularly true for hardware products that utilize superior design and technology. By leveraging China's supply chain, these companies can achieve significant cost reductions while emphasizing user experience, brand identity, and services. If they target the global market, the potential for growth is immense.

Question 15: In your opinion, which sectors should we avoid in the future?

Answer: Sectors that should be avoided are those that do not adapt to current trends, such as the traditional consumer goods industry. Also, pure SaaS companies that do not incorporate AI technology and target a very niche market should be avoided. Moreover, it is imperative that businesses establish a global vision from the outset.

Question 16: Many companies begin their operations in China, validate their business model, and then expand internationally. Does Linear consider investing in such companies that are established outside of China from Day 1?

Answer: Indeed, we have recently invested in several companies with a global vision. For instance, Agile Robots, a German company founded by a Chinese entrepreneur, planned to establish its manufacturing operations in China from the beginning. We prioritize companies that not only have a global perspective from the start but also leverage the benefits China provides. Without a connection to China, why would they seek our investment? For example, we believe a feasible strategy includes incorporating US AI technology, utilizing Europe's extensive expertise in robotics hardware, and leveraging China's manufacturing strength. This creates a globally leading enterprise that integrates software and hardware. We are open to dual headquarters, a model we refer to as "Global Arbitrage".

Question 17: From a medium to long-term perspective, where is the new driving force for China's economic growth located?

Answer: There are two areas that shouldn't decline further, i.e., real estate in the short to medium term, and population in the medium to long term. Under these conditions, the new driving force will arise from the transformation and upgrading of traditional manufacturing industries, thereby leading to the development of high-end, value-added production.

Specifically, the automotive industry, which has a market potential of tens of trillions CNY, will be a key focus.

- New energy undoubtedly serves as a significant driving force. The global energy transition offers a market opportunity worth hundreds of trillions of CNY. Major technological breakthroughs in this area could greatly improve quality and solve energy-related challenges, thus making a substantial contribution to China's development and security. It's crucial to note that this goes beyond merely economic considerations.

- In terms of long-term competitiveness, the AI sector hinges on five essential capabilities: capital, talent, data, energy, and computing power. Presently, only the US boasts all five, while China maintains four, falling short in computing power. As a result, the critical task at hand is to keep up and narrow the disparity, with a significant focus on enhancing computing power.

- Furthermore, biotechnology is a sector that could instigate a significant shift in the manufacturing industry over the next 5-10 years. Successful advancements in biotechnology could potentially supplant certain traditional manufacturing sectors, like the chemical industry. This is particularly notable as it represents a market worth tens of trillions of yuan in China.

In summary, this year, the investment team should prioritize the steady development of portfolio companies and the identification of cost-effective, internationally-minded new ventures. As for exit strategies, timely exits should be pursued when high-quality companies seek additional financing. Effective team management is key to maintaining team cohesion, boosting morale, and ensuring successful execution of these strategies.

Fingers crossed to a successful 2024!

Best regards,

Harry

--- Investments ---

We closed five new deals in Q4 2023. Please see below for details.

- **Company R**
    - Cement's entire life cycle accounts for 10-15% of total national carbon emissions. In response, the government has limited the expansion of traditional, high-energy, and high-emission cement production. Instead, it promotes the use of new cement materials and the utilization of solid waste in cement production. Carbon-negative cement can support the industry in achieving energy-saving and emission reduction targets. However, the current alkali activation method for cement uses a significant amount of strong alkali, which can lead to secondary pollution and long-term alkali residue.
    - **Company R** uses a mixed excitation solution of industrial waste salts. This allows for cost savings of approximately 50% compared to polymer gel. Despite the savings, it can still achieve a strength level of C30 or higher, broadening its range of applications. It is expected to be used in sectors such as the national coal chemical industry, mineral smelting industry, steel industry, and the aluminum industry.

- **Company SS**
    - Footed robots have been developed for many years, both domestically and internationally. In particular, the open-sourcing of MIT Cheetah's MPC algorithm in 2019 has significantly reduced the development barriers for footed robots. The primary advantage of this configuration is its ability to adapt to complex terrains. However, it inherently suffers from disadvantages in terms of efficiency, load capacity, and endurance, thereby limiting its application to B2B scenarios.
    - **Company SS** innovative technological features provide a glimpse into the commercial potential of versatile footed robots:
        i. The wheeled-footed configuration offers several essential foundations for commercialization:
            1. High mobility, enabling transportation efficiency comparable to unmanned vehicles.
            2. Strong maneuverability, accommodating various types of terrains, similar to footed robots.
            3. Improved load capacity of 80kg and endurance of 4 hours, surpassing the capabilities of footed robots.

    ii. The adoption of a learning-based control strategy, in contrast to model-based approaches, significantly enhances the control strategy's generalization, smoothness, and robustness. This advancement enables the application of footed robots in diverse scenarios, extending beyond mere demonstration purposes.
  - **Company SS** is poised to leverage its cutting-edge proprietary technology, in conjunction with China's robust supply chain and production capabilities, to achieve optimal cost reduction and deliver exceptional commercial products that cater to global market demands.

- **Company EM**
  - **Company EM** utilizes various methods such as blending, copolymerization, and physical stretching to effectively modify bio-based materials like polylactic acid (PLA) and polyhydroxyalkanoates (PHA), enhancing their performance capabilities. These modifications are aimed at meeting the specific demands of downstream processes such as spinning and high-speed 3D printing.The company is committed to addressing challenges within the bio-based materials industry, thereby promoting its rapid growth and facilitating the creation of numerous high-quality applications for bio-based materials.

- **Company Y**
  - Perovskite solar cells possess several advantageous features, including high theoretical conversion efficiency with adjustable bandgap, simplified processing, shortened production cycles, and reduced costs. These attributes hold the potential to revolutionize the crystalline silicon photovoltaic industry. However, the stability of perovskite cells in the face of light, heat, water, and oxygen remains a fundamental challenge at the material level. Current approaches typically involve passivation methods that only provide indirect mitigation of degradation or rely on specialized transition layer materials and device designs to partially enhance stability, but these solutions are difficult to implement in practical industrial settings.
  - **Company Y** specializes in the fabrication of monolithic-multi-junction perovskite solar cells, with a particular focus on achieving higher theoretical conversion efficiencies through all-perovskite stacked cells. Their all-perovskite stacked cells have demonstrated exceptional performance, reaching a conversion efficiency of 27% on a small scale, which is close to the current world record. Through innovative breakthroughs in materials and device engineering, Yongjia has successfully overcome the stability issues associated with perovskite solar cells.

- **Company M**
  - A company developing enzymatic synthesis of long DNA fragments technology (酶法合成长片段DNA技术), which is usded to splice DNA fragments and integrate them into high-throughput enzymatic DNA synthesis instrument. This drastically reduces the cost of DNA synthesis and enables efficient large-scale gene synthesis. The company also integrates gene and protein design technologies to provide large-scale gene design and synthesis services for the biotechnology industry.
  - DNA synthesis technology is the foundation of synthetic biology and even modern molecular biology. Long-chain DNA is crucial in synthetic biology, as current chemical synthesis can only generate sequences of up to 100 bases. Long chains can only be manually spliced, which is time-consuming and laborious, making it the slowest step in the research and development process, requiring large-scale instruments. Currently, there is a lack of high-quality, low-cost, on-demand DNA synthesis solutions in the market. Mayoo has *de Novo* DNA synthesis enzymes, which can synthesize DNA sequences at a speed nearly 100 times faster than current chemical synthesis methods. The enzymes are stable at high temperatures and have the potential to break the length limitation of chemical methods, enabling one-step synthesis of gene fragments longer than 1000 base pairs with a 10-fold cost reduction.

Highlights of Holdings

- Kewoke Technology released the completion of Pre-A round financing in RMB, with Linear Capital as the lead investor.
- Roxyl Carbon released the news of Pre-A round financing, with Linear Capital as the exclusive investor.
- Ecovative Materials announced Angel Round financing news, with Linear Capital as the lead investor.

--- Other things you may be interested in ---

Media reports, public events and awards about Linear or our portfolio companies

- ReaVis, Angel Round led by Linear, released the news that they have received two follow-on investments from Hongshan Capital (Sequoia China) and Xiaomi Ventures, aiming to build a new generation of HUD.
- Linear's early-stage project PowerLaw AI has completed nearly 80 million RMB in series Pre-B, Linear Capital continued to invest in the project as an existing shareholder.

- Wonsor, Linear angel round lead investment project, released the news that they've completed the Pre-A round foundraising as well as the collaboration with big companies such as BYD, Foxconn and so on.
- Can Zheng, Managing Director of Linear Capital participated in the Recording of "2060 Movers" Podcast with Dr.Yu, the founder and CEO of Carbona New Material, sharing the stories of the investment.
- We launched a new column on our wechat channel, where we have in-depth conversations with portfolio companies to tell their stories and technological features. In the first issue, Zhifen Ma, the founder and CEO of EYIMU, talked about how the company scaled from serving farms to the animal husbandry industry leveraging technologies.
- Linear Capital has been listed in the *2023 Top 30 Chinese Early-stage Investment Institutions* and *Top 30 Chinese Investment Institutions in the Digital Economy in 2023* by the most recognized industry media platform Zero2ipo.com.
- Founder and CEO of Linear Capital, Harry Wang has been awarded as *Best Early-stage Investor* and *Best AI Industry Investor* for 2022-2023 by Chinaventure.com.
- Neil Zeng, Linear Capital Partner participated in the roundtable on the theme of Investment in Deep Tech at the 2023 annual conference hosted by Zero2ipo.com, expressing Linear Capital's views on deep tech investment.
- Linear Capital has been awarded as *Top Early Stage Venture Capitalists, Top VC in AIGC field* and *Top VC in Deep Tech* by the popular media website CYZONE.

Events Hosted by Us

- In October, we hosted the offline salon "From Intelligent Robots to General Intelligent Robots", inviting Professor Jianwei Zhang, Academician of the German National Academy of Engineering and the Hamburg Academy of Sciences and Humanities. We also invited scholars from laboratories at Stanford University, Columbia University, and ETH Zurich, to discuss and exchange ideas on the current status, challenges, and future development of general intelligent robots with ten Linear Capital portfolio companies in the robotics field.
- Linear Academy, the learning and sharing platform of Linear Capital collaborated with SPD Silicon Valley Bank, hosting an event on Cash Flow Management and Forex Trend Analysis.
- Linear Capital launched the Global Young PhD Fellow Program. Read more.

Other

- Linear Capital founder and CEO Harry Wang published the 2023 summary titled "Moving Forward in Challenges".
- Fan Ling, founder and CEO of Tezign, was selected as one of the Pioneers in the New Growth by *Harvard Business Review*.

Best regards,

Linear Team