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Short term market response and financial performance of continuous mergers and acquisitions in the aviation industry: a case study of Zhongzhi shares

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Abstract. In the context of slowing global economic growth, corporate co mpetition has become increasingly fierce, and many enterprises have pursu ed development through merger and acquisition activities. Data shows that although the number of global merger and acquisition transactions has fluct uated in the past five years, the scale of mergers and acquisitions has contin ued to grow driven by industry integration needs. Starting from merger and acquisition theories such as synergy effect and economies of scale, the pap er expounds the strategic motivations and implementation processes of cor porate merger and acquisition. It tracks market reactions to the acquisitions through the event study method, interprets investor expectations using the information signaling theory, and analyzes changes in corporate profitabilit y, solvency, and other indicators through financial capability metrics. The s tudy finds that in the early stage of Zhongzhi Co., Ltd.'s merger and acquisi tion, there was a wait-and-see attitude in the market, leading to short-term s tock price fluctuations. With the advancement of integration, long-term pos itive development was achieved, and financial performance also showed si gnificant improvement, providing a typical paradigm for corporate merger and acquisition practices.

1 Introduction

In the context of the in-depth adjustment of the global economic pattern and the acceleration of industrial upgrading, continuous mergers and acquisitions are becoming an important capital operation mode for enterprises to achieve strategic expansion and enhance their core competitiveness. As a core enterprise in China's aviation industry, Zhongzhi Co., Ltd. occupies a dominant position in the domestic helicopter manufacturing industry. Its successive mergers and acquisitions of Changfei Group and Hafei Group show the far-reaching consideration of the company's strategic layout and its positive and enterprising development attitude.

From the perspective of mergers and acquisitions, this move of Zhongzhi Co., Ltd. contains three strategic intentions. First, a need for technology complementarity and resource integration. Changfei Group has a leading technology in the field of armed helicopters, and

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the Z-10 is the representative of its outstanding achievements; Hafei Group has rich experience in civil helicopters and fixed-wing aircraft, and the AC312 series has been widely recognized by the market. After the merger and acquisition, the company was able to realize technology sharing, build a whole industry chain layout covering R&D, manufacturing, and sales, avoid duplicate construction, and improve the efficiency of production resource allocation. Second, financial and capital operation considerations. As unlisted high-quality assets, Changfei and Hafei can significantly increase their valuation and broaden financing channels after they are injected into listed companies. In the face of the long R&D cycle and high cost of the helicopter industry, the combined funds can be more concentrated in key projects, expand the scale of revenue and profit, and optimize the performance of financial statements. Third, policy-driven. In response to the national aviation industry policy, Zhongzhi Co., Ltd. deepens the military-civilian integration strategy and implements the requirements of state-owned enterprise reform and professional integration. Through this merger and acquisition, the competition in the same industry has been reduced, the industrial pattern of "one enterprise and one industry" has been promoted, the efficiency of capital operation has been improved, and the development of dual-use technology has been supported.

In M&A practice, in September 2023, Zhongzhi Co., Ltd. announced that it plans to acquire 100% of the ordinary shares of Changfei Group and Hafei Group jointly held by AVIC and AVIC by issuing shares [1]. By April 2025, this major acquisition will be completed. This merger and acquisition is not only a key measure for Zhongzhi to comply with the development strategy of the aviation industry and grasp the opportunity of the rise of the low-altitude economy, but also demonstrates that at a time when the global market competition is fierce, integrating the industrial chain and improving the technological innovation ability through continuous mergers and acquisitions has become the core strategic path for the company to seek breakthrough development [2]. In the research of continuous M&A, I will use the information and signal theory and the event research method to find that the M&A announcement of the enterprise will release the signal of the hidden value of the target enterprise to the market, affect the stock price and financial performance, and provide a theoretical basis for all parties. Through the event research method, the individual stock data of Zhongzhi Co., Ltd. before and after the merger and acquisition announcement date are analyzed, and the expected actual rate of return, abnormal rate of return and excess cumulative rate of return are calculated, to judge the impact of stock price fluctuations on financial performance. An in-depth analysis of the continuous M&A process of Zhongzhi Co., Ltd. has important theoretical value and practical guidance significance for revealing its strategic logic, evaluating the effectiveness of M&A, and exploring the effective path for aviation manufacturing enterprises and even more high-tech industries to achieve high-quality development through M&A.

2 Short-term financial performance analysis based on event analysis

2.1 Determine the event date and window period

The event date usually refers to the announcement date of a major event of the enterprise. On March 14, 2024, Zhongzhi Co., Ltd. announced that it intends to acquire 7.57% of Changfei Group and 19.21% of Hafei Group held by Aviation Industry Group and 92.43% of Changfei Group and 80.79% of Hafei Group held by AVIC by issuing shares. Therefore, March 14, 2024 is identified as the event date in this article [3].

This article takes the 20 days before and after the date of the reorganization announcement on March 14, 2024 when the market can react as the window period, so the window period of this event, that is, (-20, 20); At the same time, 120 days before the announcement date to 21 days before the announcement date are selected as the estimated window period, i.e., (-120, -21).

2.2 Simulate the relationship between individual stocks and market indices during the window period

The basic model of the market is as follows:

$$R_{it} = \alpha_i + \beta R_{mt} + u_{it} \tag{1}$$

In this paper, the real return of individual stocks of the group and the real return of the Shanghai Composite Index are calculated by Excel in the estimation window period (-120, -21), and the regression equation between the return of individual stocks and the market return is obtained by using the market model, y=1.2847x- 0.0009, as shown in Figure 1.

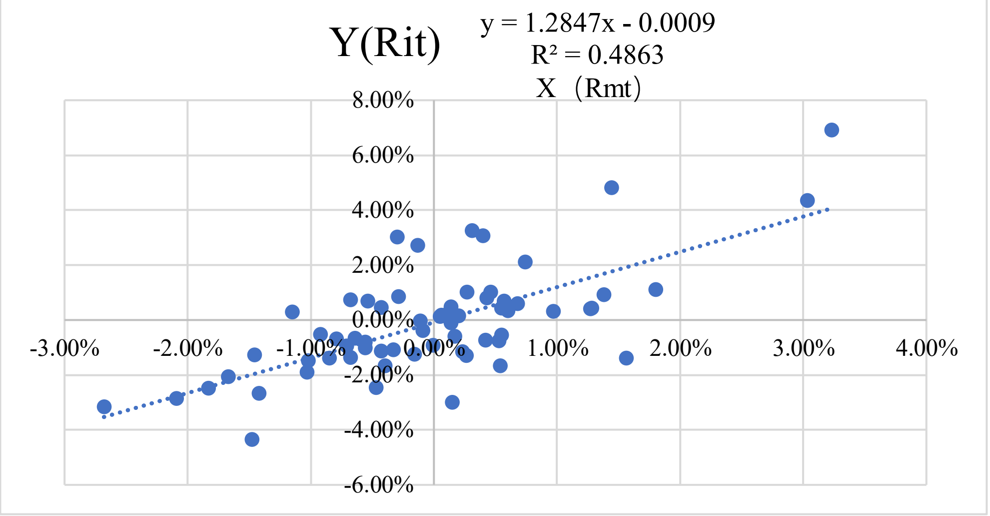


Fig. 1. Expected rate of return model during the window period.

2.3 Calculate the expected rate of return, abnormal rate of return, and excess cumulative rate of return

Excess Rate of Return (ARit) = Real Rate of Return (Rit) of the Event Window - Expected Normal Rate of Return (Rit´). Cumulative excess rate of return (CAR) refers to the cumulative sum of all excess return rates during the window period, CARit=ΣARit [4].

According to the linear regression equation Rit´=1.2847Rmt-0.0009 simulated, the expected normal rate of return (Rit´) for the window period (-20,20) is calculated, and the excess rate of return (ARit) and cumulative excess return (CARit) are calculated in turn.

This paper mainly analyzes the two key stages of market reaction in the merger and acquisition of helicopter assets of Zhongzhi Co., Ltd., that is, the short-term fluctuations before and after the merger announcement date and the market feedback in a long period after the merger and acquisition, so as to evaluate the effect of the merger and acquisition.

Phase 1 (20 days before and after the announcement date) Figure 2 shows that ARit and CARit fluctuate significantly in the 20 days before and after the announcement date, reflecting the immediate and strong reaction of the market to the news of the merger. This reflects the fact that in the case of information asymmetry, the market quickly forms expectations based on limited information, resulting in stock price fluctuations. The price of the M&A deal was higher than market expectations, raising doubts about the ability to recover M&A costs and realize synergies, further exacerbating the volatility of the stock price. After reaching the lowest point 18 days after the announcement, the market began to gradually digest the information and adjust expectations, laying the foundation for subsequent market reactions.

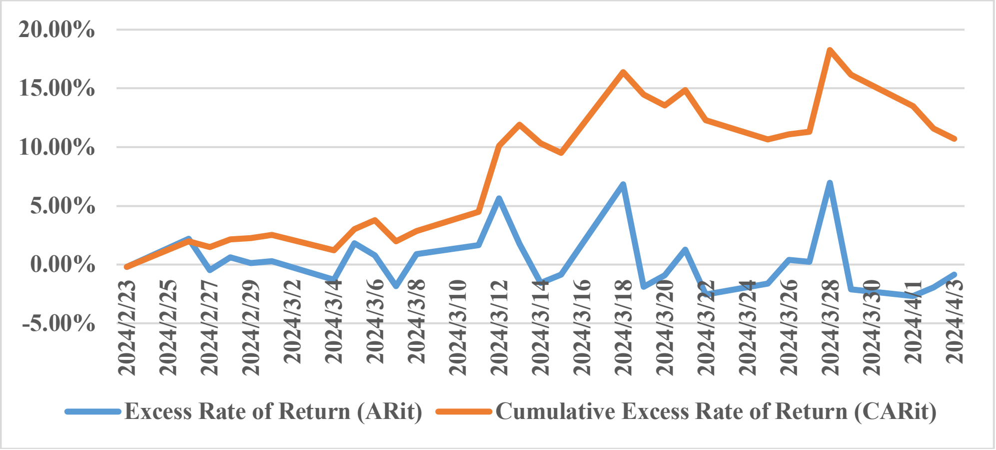


Fig. 2. Trends of excess return and excess cumulative return during the window period

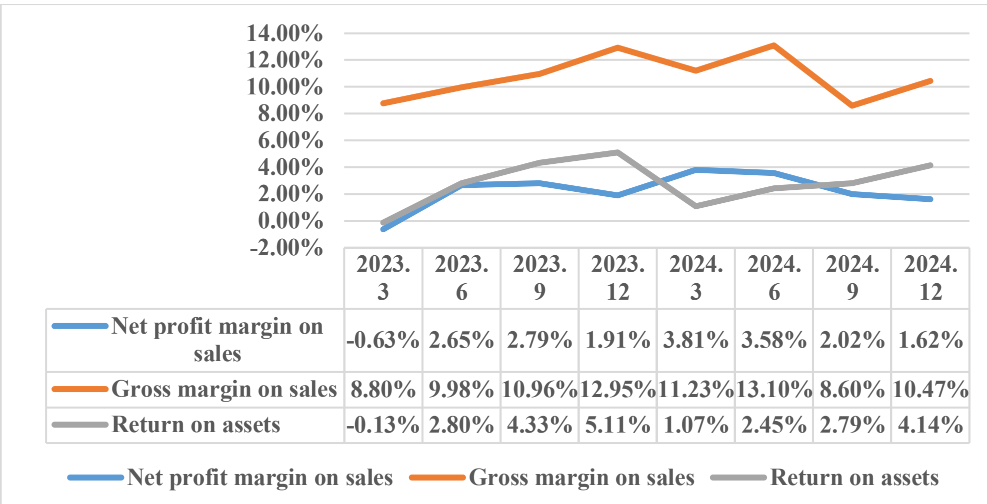
Phase 2 (21 to 181 days after the announcement date) Figure 3 selects 105 sets of disclosed data, revealing that the cumulative excess return has increased significantly since about 31 days after the merger, and the volatility has continued to rise, indicating that the market generally has a positive view of the long-term prospects of the merger. The positive market response is based on initial signs of success in M&A integration, including improved operating data, initial realization of synergies, and management's aggressive planning for future developments, which have strengthened investor confidence. The increase in stock price and excess return indicate that the M&A not only improved the financial performance in the short term, but also brought long-term benefits that exceeded market expectations, which verified the success of the M&A strategy.

Fig. 3. Trend of excess rate of return and excess cumulative rate of return 181 days after the announcement date

3 Evaluation of the financial ability of the merger and acquisition of Changfei Group and Hafei Group by Zhongzhi Co., Ltd

The financial capacity evaluation studies the financial performance of mergers and acquisitions by analyzing the changes in the proportional relationship before and after the time of successive mergers and acquisitions, and will analyze them from four aspects: profitability, solvency, operating ability, and growth ability [5].

3.1 Profitability



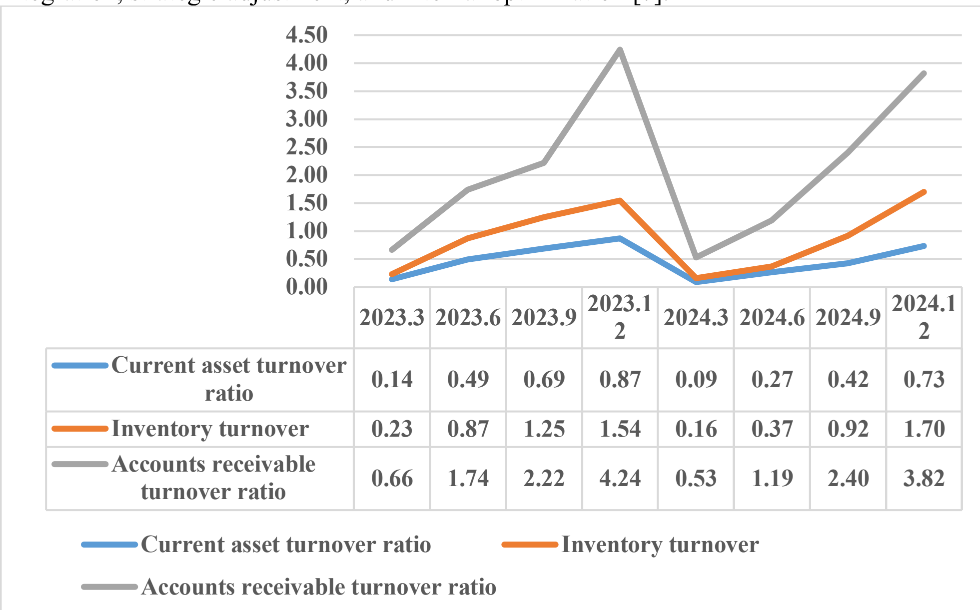
	2023.3	2023.6	2023.9	2023.12	2024.3	2024.6	2024.9	2024.12
Net profit margin on sales	-0.63%	2.65%	2.79%	1.91%	3.81%	3.58%	2.02%	1.62%
Gross margin on sales	8.80%	9.98%	10.96%	12.95%	11.23%	13.10%	8.60%	10.47%
Return on assets	-0.13%	2.80%	4.33%	5.11%	1.07%	2.45%	2.79%	4.14%

Fig. 4. Profitability indicators of Zhongzhi shares from 2023 to 2024

As shown in Figure 4, the three profitability indicators of Zhongzhi Co., Ltd. from 2023 to 2024, the net profit margin of sales, the gross profit margin of sales and the return on assets all show a fluctuating upward trend, and the overall profitability shows a fluctuating upward trend. In the medium term, although it was affected by the changes in product structure caused by short-term mergers and acquisitions, at the same time, due to the continuous integration of businesses and the continuous optimization of resources after mergers and acquisitions, the company's sales revenue gradually increased and the company's operational efficiency improved, thus showing a fluctuating upward trend in overall profitability [6].

3.2 Operational capacity

Figure 5 shows that the fixed asset turnover rate, inventory turnover rate and accounts receivable turnover rate slowed down in the short term before and after the merger date, but the accounts receivable turnover rate showed a rapid upward trend in the last quarter of 2023, and the three indicators reached a peak at the end of 2023, and the overall trend of steady increase in the later period. In the early stage of mergers and acquisitions, enterprises usually have to go through a period of consolidation, and due to factors such as organizational structure and product adjustment, personnel adjustment, and business process optimization, the operational efficiency is temporarily reduced. The short-term decline in the operating capacity indicator reflects the immediate challenges brought about by M&A and the instability of the transition period, while the subsequent recovery reflects the gradual overcoming of these challenges and realizing the long-term value of M&A through effective integration, strategic adjustment, and internal optimization [7].



	2023.3	2023.6	2023.9	2023.12	2024.3	2024.6	2024.9	2024.12
Current asset turnover ratio	0.14	0.49	0.69	0.87	0.09	0.27	0.42	0.73
Inventory turnover	0.23	0.87	1.25	1.54	0.16	0.37	0.92	1.70
Accounts receivable turnover ratio	0.66	1.74	2.22	4.24	0.53	1.19	2.40	3.82

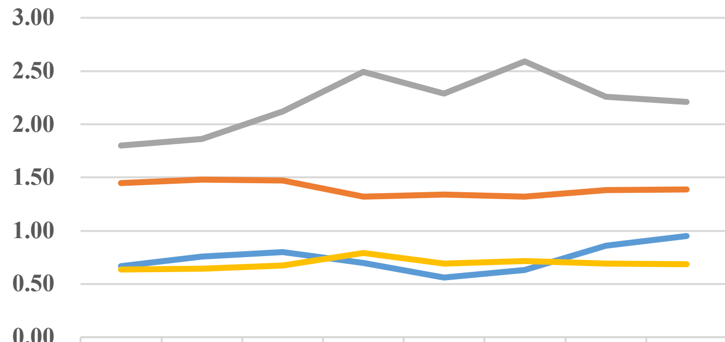
Fig. 5. 2023-2024 operating capacity indicators of China Zhizhi Co., Ltd

3.3 Solvency

According to Figure 6, from the perspective of the current ratio, the value fluctuated from 1.32to1.48 from March 2023 to December 2024, which was relatively stable overall. It is generally believed that the reasonable value is about 2, and the enterprise is lower than this standard, indicating that the current assets are not well protected by the current liabilities, and the short-term solvency is always weak, and there is no obvious improvement trend. In terms of quick ratio, it fell first and then increased, reaching 0.67 in March 2023, falling to 0.56 in March 2024, and then rising to 0.95 in December 2024, but still below the ideal value1. The decline in the early period indicates that the short-term immediate solvency has weakened, and the later recovery indicates that it has improved, but the overall immediate solvency still needs to be improved [8].

From the perspective of the asset-liability ratio, the fluctuation range is 0.6355 - 0.718, which has always maintained a high level and has no obvious downward trend. It reflects that the long-term debt repayment pressure of enterprises has been relatively large, financial risks persist, and the long-term debt repayment ability has not been effectively improved while using debt leverage.

Finally, see the equity ratio, which rose from March 2023 to June 2024, from 1.80 to 2.59, before falling to 2.21 in December 2024. The increase in the early period indicates that the long-term solvency has weakened, and although it has recovered in the later stage, the overall value is relatively high, and the degree of protection of creditors' rights and interests is still not ideal.



	2023.3	2023.6	2023.9	2023.12	2024.3	2024.6	2024.9	2024.12
Quick ratio	0.67	0.76	0.80	0.70	0.56	0.63	0.86	0.95
liquidity ratio	1.45	1.48	1.47	1.32	1.34	1.32	1.38	1.39
Equity ratio	1.80	1.86	2.12	2.49	2.29	2.59	2.26	2.21
Debt-to-asset ratio	0.6355	0.6432	0.6734	0.7907	0.6928	0.7180	0.6908	0.6862

Quick ratio liquidity ratio Equity ratio Debt-to-asset ratio

Fig. 6. 2023-2024 capacity indicators of Zhongzhi shares

On the whole, the process of mergers and acquisitions to achieve business integration will merge the debts of Zhongzhi and its subsidiaries with them, which to a certain extent affects the short-term and long-term solvency of Zhongzhi shares, and the mergers and acquisitions have not enhanced the solvency of Zhongzhi shares, and further planning and adjustment is needed in terms of solvency.

3.4 Ability to grow

As shown in Figure 7, from the perspective of the growth rate of attributable net profit, from March to June 2023: from -234.51% to 1804.95%, it shows that the profit has achieved explosive growth in the short term after the merger and acquisition, which may be due to the synergistic effect brought by the merger and acquisition, the optimization of resource integration, and the rapid improvement of profitability. June-December 2023: From 1804.95% to 55.71%, although it still maintains growth, the growth rate has slowed down significantly, which may be due to factors such as overdraft potential in the early stage of growth, or market competition and integration difficulties. March-June 2024: From 942.21% to -9.18%, from high growth to negative growth, business operations may encounter difficulties, such as changes in market demand, internal management problems, etc. June-December 2024: Continued to fluctuate in the negative growth range, with -7.98% in December, indicating that the profitability of enterprises in the later period continued to be under pressure and faced severe challenges [9].

From the perspective of the growth rate of total operating income, another growth capacity indicator, from March to December 2023: from 103.93% to 36.56%, the overall trend is declining but all are positive, indicating that the operating income after the merger and acquisition continues to increase, but the growth rate is gradually slowing down, and the growth momentum of market expansion or product sales is weakening. March-June 2024: from 2.76% to -31.69%, from positive to negative, corporate revenue declined. June-December 2024: From -31.69% to 11.93%, there is a rebounding trend, and the company's revenue has improved after taking measures, but the overall growth is unstable [10-12]. From the perspective of weighted return on net assets, from March to December 2023: from -0.13% to 5.11%, gradually improving, indicating that the profitability of enterprises using net assets is increasing, and the efficiency and profitability of asset operation after mergers and acquisitions are improving. March-December 2024: fluctuating between 1.07% and 4.14%, the overall stability is relatively stable, but the value is not high, indicating that the ability of enterprises to use net assets to obtain income has not been greatly improved, and the sustainability and stability of profitability need to be strengthened [11-13].

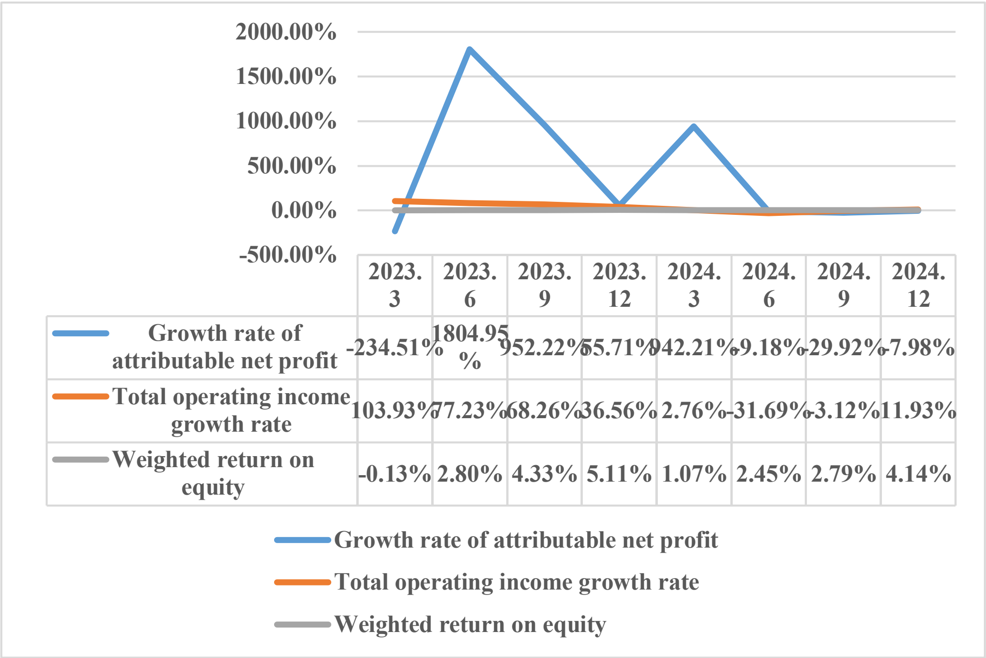


Fig. 7. 2023-2024 growth capacity index of Zhongzhi shares

On the whole, the growth ability of the company after the merger and acquisition of Zhongzhi Co., Ltd. in the window period (March 14, 2023) has fluctuated greatly. In the early stage, there are growth highlights, but in the later stage, there is a lack of growth momentum or even decline, and the growth ability is facing challenges, so Zhongzhi needs to pay close attention to market trends, optimize the internal operating efficiency of the enterprise, enhance product competitiveness, expand its product line, and seize the low-altitude economic outlet to improve the growth trend [13-15].

4 Conclusion

Taking Zhongzhi Co., Ltd. as an example, it has achieved technological synergy, market expansion and industrial chain optimization through continuous mergers and acquisitions, which has significantly enhanced the competitiveness and industry status of the enterprise. This case shows that continuous mergers and acquisitions can not only improve financial performance in the short term, but also realize the integration of helicopter manufacturing business through continuous mergers and acquisitions, and build a helicopter business chain of helicopter production and processing and maintenance of helicopter complete aircraft, parts production and processing, and maintenance in addition to subsystems, some raw materials and parts, which enhances business integrity, greatly enhances industrial synergies and reduces related party transactions. However, successive mergers and acquisitions also come with a high level of integration risk, which can lead to lower-than-expected synergies and even a business crisis if not properly handled. It can be seen that the success of continuous mergers and acquisitions depends on a scientific decision-making mechanism, efficient resource integration capabilities and a robust risk management and control system. From the perspective of finance and market, although the stock price has risen in the short term due to the news stimulus after the completion of the acquisition, it has been affected by the adjustment of the industry sector and has been in the stage of shock adjustment for a long time, but with the development of the low-altitude economy and the gradual emergence of the company's business integration effect, the future stock price still has a lot of room to rise.

At the enterprise level, the M&A decision-making process should be optimized, a professional M&A team should be established, due diligence and risk assessment should be strengthened, and a detailed integration plan should be formulated to ensure the efficient allocation of resources after the M&A. The experience of Zhongzhi Co., Ltd. shows that technology-based mergers and acquisitions need to pay special attention to the integration of R&D teams and innovation incentives. In addition, at the policy level, it is necessary to strengthen the guidance and regulation of continuous M&A, such as improving preferential tax policies to encourage technology M&A, and strengthening information disclosure requirements to prevent systemic risks caused by excessive leverage. Finally, industry associations can play a bridging role to help enterprises improve their M&A capabilities and promote the healthy development of the industry by organizing experience exchanges and training. This merger and acquisition is an important practice of the reform and reorganization of state-owned enterprises and the integration of military assets, which creates more space for the subsequent use of the capital market to support the development of military enterprises, and also provides valuable experience and reference examples for other enterprises in industrial integration, compliance operation and grasping policy opportunities to promote development.

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