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Research on the Motivation and Performance of MicroPort's Strategic Continuous Spin off Listing

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Abstract

Spin off listing, as a rising means of corporate transformation in China in recent years, is expected to enable enterprises to achieve professional operations and value-added purposes. Due to the impact of the development timeline, there are currently few scholars conducting in-depth research on the special strategic activity of continuous split listing in China. This paper takes MicroPort's continuous spin off of its subsidiaries listed as an observation case to examine the motivation behind it and the resulting impact. The research findings are as follows: (1) MicroPort has listed its subsidiaries for many times in order to raise more R&D funds and implement management incentives; (2) Among the "minimally invasive" companies, only Xinmai Medical has achieved short-term profits, and the long-term financial performance improvement effect is not ideal; (3) After short-term growth in the initial stage of listing, the market performance of various companies in the "minimally invasive" series continues to "shrink" in the future market value.This study has important practical significance for the strategic choice of continuous corporate spinoffs and the realization of their value added.

Keywords

Strategic Layout; Continuous Splitting; Market Competitiveness.

1. Introduction

In response to the increasingly fierce market competition brought about by economic globalization, enterprises have adopted mergers and acquisitions to expand their scale and adjust their industrial structure. However, with the promotion of excessive diversification, its marginal effect decreases, and the overall Strategic risk and governance risk of the company increases (Xu Zongyu et al., 2022), so some enterprises turn to asset and Demerger to make breakthroughs. In December 2019, China's "Several Regulations on the Pilot Domestic Listing of Subsidiaries under the Spin off of Listed Companies" were introduced, and the relevant systems and business processes tended to be standardized. The enthusiasm for company spinoffs was high, and the "A spinoff A" and "Hong Kong spinoff A" were constantly heating up. Among them, the healthcare industry has seen a phenomenon of clusters of split listings. Many medical companies have launched secondary or even multiple split listings due to strategic needs, such as the "Minimally Invasive Series", "Huada Series", "Yaoming Series", etc., all following the logic of "cross track expansion", one after another splitting their subsidiary companies for secondary listings to achieve the overall strategic layout of the group. So, what is the motivation for the strategic and continuous separation of enterprises, and whether the original intention of enterprise separation has been realized? What impact has the continuous spin off behavior brought to the enterprise itself? The research on the above issues has important practical significance.

In view of this, this paper takes the listing of MicroPort's continuous spin off subsidiaries as an example to study the above issues. In recent years, MicroPort has continued to split its core business sector and go public, adopting the "production listed company" model, while

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expanding new business and establishing subsidiaries; Introduce investors from all walks of life to "grow up" the company together, and then split and list it. In just five years, a total of five subsidiary companies, including Xinmai Medical, Xintong Medical, Minimally Invasive Robotics, Minimally Invasive Brain Science, and Microelectrophysiology, were listed on the Science and Technology Innovation Board and the Stock Exchange, and the "Minimally Invasive Department" has become increasingly large. This article first conducts a literature review on the motives and performance of the spin off listing, and on this basis, conducts in-depth information mining and analysis on the overview, spin off situation, motives, and performance of the selected case companies.

2. Research Design and Case Overview

2.1. Research Method

In this paper, the typical case of MicroPort's continuous spin off of multiple subsidiaries for listing is mainly based on two considerations: first, the case reflects the strategic layout of many businesses of leading enterprises in the medical machinery industry for spin off and listing, which can reflect the motivation of continuous spin off from multiple levels; Secondly, the case data is sufficient, accurate, and highly transparent, with high social attention, making it easy to accurately measure the impact of continuous corporate spinoffs.

2.2. Case Overview

2.2.1. Introduction to MicroPort

MicroPort was founded in Zhangjiang Science City, Shanghai, China in 1998 and listed on the main board of the Hong Kong Stock Exchange in 2010. It is an innovative high-end medical machinery group, mainly involved in cardiovascular and neural intervention business, orthopedic medical machinery business, surgical robots and other surgical medical machinery business. It has major production (R&D) bases in China, the United States, France, Italy, Germany, the United Kingdom and other parts of the world, A global network of research and development, production, marketing, and services has been formed. As of the end of 2022, there were over 400 products in the micro innovation market, including multiple business clusters. The products have entered more than 100 countries or regions worldwide, covering over 20000 hospitals.

2.2.2. Basic situation of MicroPort Continuous Separation

The continuous spin off events involved in this case mainly occurred in 2019-2022, during which a total of 5 subsidiaries of MicroPort were spun off and listed. On July 22, 2019, Shanghai Minimally Invasive Xinmai Medical Technology Co., Ltd. was listed on the Science and Technology Innovation Board, and its stock price rose by 207% on the first day. Established in August 2012, Xinmai Medical is responsible for the production, R&D and sales of aortic and peripheral vascular interventional medical devices under MicroPort. In 2018, Cardiovascular Medical ranked second in the market share of aortic intervention medical devices in China, and ranked first among domestic brands in terms of market share.

On February 4, 2021, Minimally Invasive Xintong Medical Technology Co., Ltd. was listed on the Hong Kong Stock Exchange, with a first day increase of 58.85%. Xintong Medical was established in 2015, focusing on the research and commercialization of innovative transcatheter and surgical solutions in the field of heart valve diseases.

On November 2, 2021, Shanghai MicroPort Robot Co., Ltd. was successfully listed on the main board of the Hong Kong Stock Exchange. Minimally Invasive Robotics was established in 2015 and is the world's first tier surgical robot company. Its main business scope is to design, develop, and commercialize innovative robots to assist surgeons in completing surgical procedures.

ISSN: 2688-9323

On July 15, 2022, Minimally Invasive Brain Science Co., Ltd. was listed on the Hong Kong Stock Exchange. Minimally invasive neuroscience is mainly engaged in the research and development, production, and commercialization of neural intervention therapy and pathway medical devices, focusing on the exploration of neural intervention therapy technology and product development. It has covered more than 2600 hospitals in China and provided safe and effective stroke disease solutions for over 130000 patients.

On August 31, 2022, Shanghai Minimally Invasive Electrophysiology Medical Technology Co., Ltd. officially landed on the Science and Technology Innovation Board. Minimally invasive electrophysiology was established on August 31, 2010. It is a high-tech enterprise specializing in the research and development, production, and sales of innovative medical devices in the field of electrophysiological intervention diagnosis and ablation therapy. After more than ten years of continuous innovation, the company has conquered many key technologies in this field, breaking the long-term technological monopoly of foreign manufacturers.

Table 1 shows the main time nodes and business scope of the listing of the five subsidiaries of MicroPort.

Table 1. Brief Introduction to Continuous Split of MicroPort

Company abbreviation	Stock code	Establishment time	Time to market	Listing location	Business scope
Cardiovascular Medicine	688016	2012-08-17	2019-07-22	Shanghai Stock Exchange Science and Technology Innovation Board	Production, research and development, and sales of aortic and peripheral vascular interventional medical equipment business
Xintong Medical B-B	02160	2015-05-21	2021-02-04	Hong Kong Stock Exchange Main Board	Development and commercialization of innovative transcatheter and surgical solutions in the field of heart valve disease
Minimally Invasive Robot B	02252	2015-05-11	2021-11-02	Hong Kong Stock Exchange Main Board	Design, development, and commercialization of innovative surgical robots
Minimally Invasive Brain Science	02172	2012-05-16	2022-07-15	Hong Kong Stock Exchange Main Board	Research and development, production, and commercialization of neurological intervention therapy and pathway medical devices
Microelectrophysiology	688351	2010-08-31	2022-08-31	Shanghai Stock Exchange Science and Technology Innovation Board	Innovative medical device research and development, production, and sales in the field of electrophysiological intervention diagnosis and ablation therapy

ISSN: 2688-9323

3. Case Analysis and Discussion

3.1. Analysis on the Motivation of Continuous Separation of MicroPort

3.1.1. Motivation Analysis based on Core Strategy Theory

The core strategy driving force believes that the parent company needs to be spun off based on professional focus, and the spin off can enable the parent company to focus on core business development. At present, MicroPort has many business clusters, up to ten businesses, with a wide range of radiation and a high degree of professional refinement. There are many MicroPort products in many fields of the medical machinery industry. However, extensive business development has also brought operational difficulties to MicroPort. Investment in all businesses requires high R&D, high investment and high cost, and high investment may not bring benefits to MicroPort. Therefore, the separation of MicroPort's subsidiaries can not only enable the company to pay more attention to its core business, but also effectively expand its market share in the medical market and gradually move towards industrialization.

Xinmai Medical was officially launched in July 2019, and its aortic and peripheral vascular intervention business is an important business of the parent company. After the successful listing, the revenue has been increasing year by year. From 2019 to 2022, the revenue accounted for 6.03%, 11.11%, 13.79%, and 15.31% of the total revenue of the group, respectively, far exceeding other businesses of the company. This indicates that Xinmai Medical has improved its business operations after being spun off, and its business has shown a core trend.

Xintong Medical was officially listed in February 2021. According to its prospectus, the company's first commercial product, VitaFlowTM, began commercialization in August 2019 and only received revenue in 2019. Its revenue from 2019 to 2022 accounted for 0.39%, 2.45%, 4.05%, and 4.29%, respectively.

Minimally invasive robots were officially launched in November 2021, and as a zero revenue company, they successfully went public. They recorded their first revenue of 2.15 million yuan in 2021, contributing to the first commercial product, the dragonfly eye "DFvision" three-dimensional electronic laparoscopy.

Microinvasive Brain Science was officially listed in July 2022, and its revenue in the first three years of listing accounted for 3.32%, 5.24% and 7.71% of the company's total revenue respectively. Neurointervention business is another important business segment of MicroPort, and its split is conducive to the parent and subsidiary companies focusing on their core business areas.

Minimally invasive electrophysiology was officially launched in August 2022. The company's revenue accounted for 3.10%, 3.34%, and 3.83% of the company's total revenue in the first three years of listing, respectively. Although the proportion was not high, it remains an important business area for the company.

It can be seen from the above analysis that, except for minimally invasive robots, the revenue of each subsidiary accounts for a certain proportion of the parent company's revenue, and the spin off of the subsidiary has a significant impact on the parent company's operation of MicroPort. After the spin off, the revenue of the subsidiary is on the rise year by year, and the total revenue is also on the rise in general. The spin off of MicroPort's subsidiaries in succession can make the parent company and subsidiary's business more core, It can not only retain the core competitiveness of the enterprise's main business, but also gain more operational autonomy for subsidiaries, creating greater value for the enterprise.

3.1.2. Motivation Analysis based on Financing Demand Theory

From Table 2, it can be seen that the net cash generated from operating activities of MicroPort after 2017 can no longer meet the demand for investment activities, and the enterprise has a

ISSN: 2688-9323

strong financing demand; Especially in the past three years, the cash flow generated by the company's operating activities has been negative, with insufficient hematopoietic capacity and poor profitability. In the process of development, medical device enterprises will continuously increase their research and development of products, explore new businesses, and technology research and development will take a long time to reflect. In this process, enterprises need sufficient funds to support their operations. Relying solely on a single main business profit to carry out new business is far from enough. Continuously splitting subsidiary listings to obtain funds, and financing needs are the main reasons for the split listing.

Table 2. MicroPort 2016-2022 Cash Flow from Operating and Investing Activities

Project/Time	2016	2017	2018	2019	2020	2021	2022
Net cash generated from operating activities/100 million yuan	5.73	6.35	5.77	1.85	-1.51	-16.42	-23.91
Net cash used in investment activities/100 million yuan	5.75	5.63	21.60	5.58	9.67	41.81	28.75

In addition, the financing demand assumption is also reflected in the need to raise more research and development funds. MicroPort not only wants to be an enterprise in the field of coronary intervention, but also wants to be a giant in many fields. Relying on past profits, it is difficult to cover a wide range of research and development pipelines and projects. The proportion of R&D investment in operating revenue has increased from 13% to 49.93%, accounting for half of the operating revenue. At the same time, MicroPort spared no expense to expand its business, and successively acquired the American orthopedic business and heart rate management business, as well as the German company Hemovent, with US $290 million, US $190 million and RMB 923 million respectively. Under the guidance of the expansion strategy of "endogenous+outsourcing", MicroPort has formed a broad business layout by virtue of its own research and development efforts and crazy extensional acquisitions, but the profitability of MicroPort has not kept pace with its rapid development.

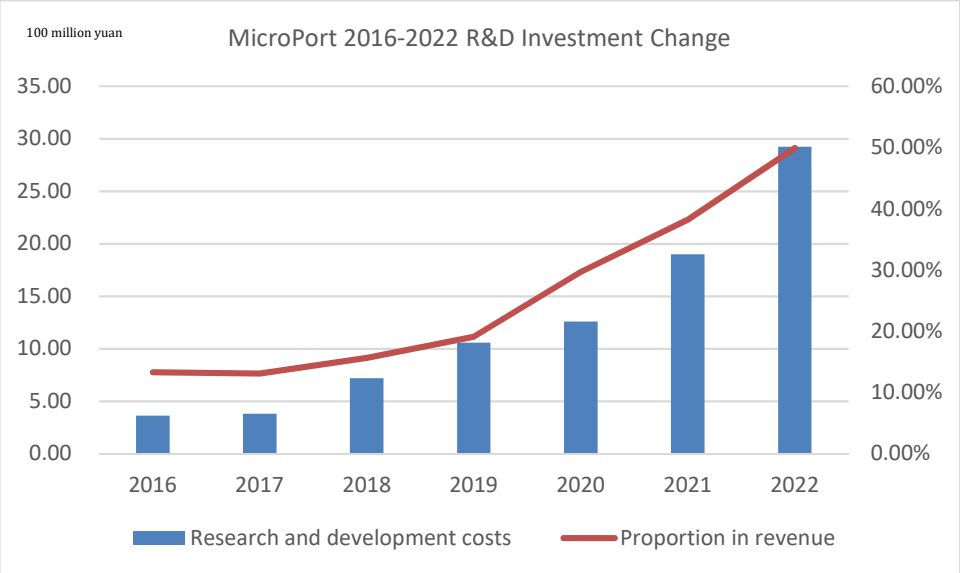

Figure 1. MicroPort 2016-2022 R&D Investment Change

From the perspective of profitability, the average Gross margin of the medical device industry is about 50%. It can be seen from Table 3 that the Gross margin of the three major medical device enterprises in China is higher than the average level of the industry. The Gross margin

ISSN: 2688-9323

of minimally invasive therapy is 70.2%, which is moderate among industry giants. However, the Profit margin rate of MicroPort is at a low level compared with other giant enterprises. The Profit margin rate in 2018 was only 2.74%, far lower than the industry's Profit margin rate of 20%. The main reason is that in recent years, MicroPort has spent a lot of money and energy on technology research and development and M&A expansion, which has led to its indigestion, poor asset utilization and stagnant net profit.

Table 3. Comparison of Profitability of Chinese Medical Device Enterprises in 2018

Company/Project	Operating revenue/100 million yuan	Gross margin	Net profit margin	Roe	Annualized return on investment
MicroPort	44.90	70.20%	2.74%	5.66%	2.71%
Weigao Shares	88.09	61.18%	17.21%	10.75%	9.15%
LEPU	63.60	72.75%	19.74%	19.13%	14.01%

Through the previous background introduction, we can know the good prospects of the medical machinery product market. Driven by the industry development, MicroPort in this industry is developing vigorously. It can be seen from Table 4 that the operating revenue of MicroPort will keep a positive growth in 2022, while the operating profit and total assets will both show a downward trend, which is worse than the upward trend of the industry average. In addition to the attributes of "negative development" and "high R&D", MicroPort has an urgent need for funds. At the same time, the asset liability ratio in the past five years has been 55.12%, 49.38%, 43.79%, 59.07%, and 58.50%, all higher than the industry average of 35.22%, indicating its demand for financing.

Table 4. Growth Comparison between MicroPort and the Industry in 2022

Company/Project	Year-on-year growth rate of basic earnings per share	Year-on-year growth rate of operating revenue	Year-on-year growth rate of operating profit	Year-on-year growth rate of total assets
MicroPort	-72.04%	17.96%	-88.60%	-0.40%
Industry Average	-794.37%	38.14%	1227.70%	7.54%
Industry median	-8.51%	12.17%	-1.05%	5.28%

To sum up, MicroPort has a strong financing demand due to the deterioration of business conditions and high R&D investment, and its continuous spin off has financing motivation.

3.1.3. Motivation Analysis based on Market Value Management Theory

According to market value management theory, spin off listing is beneficial for improving the transparency and information disclosure level of subsidiaries, releasing their potential value, and emphasizing the overall improvement of enterprise value. After the listing of several subsidiaries of MicroPort, each subsidiary will provide its own financial status and operating results of its main business as an independent benchmark, separate from the information disclosure of the Group's remaining business, which will help investors reach investment decisions under the condition of splitting up the company and retaining the Group's financial status, operating results, management strategies, risks and returns more transparent.

The valuation of diversified enterprises has always been a challenge in the capital market. Usually, diversified enterprises have a certain discount in their valuation due to the complexity of their business, which is difficult for investors to understand. However, after splitting up, undervalued businesses can have the opportunity to be re valued, thereby promoting the growth of the company's value. From Table 5, it can be seen that the subsidiary companies have

ISSN: 2688-9323

significantly improved their market value after the spin off, with Xintong Medical reaching 18.66 times the pre spin off market value. It can be seen that the spin off of major subsidiaries of MicroPort can fully release the value of subsidiaries.

Table 5. Market Value Comparison of MicroPort Subsidiaries before and after Listing

Name of subsidiary	Before going public		Market value on the day of listing/100 million yuan	Multiple
	PE	Market value/100 million yuan		
Cardiovascular Medicine	30.47	27.73	102	3.68
Xintong Medical B-B	20.23	21.02	392.17	18.66
Minimally Invasive Robot B	6.68	96.20	384.73	4.0
Minimally Invasive Brain Science	6.79	25.98	126.32	4.86
Microelectrophysiology	4.11	25.50	61.88	2.43

However, with the passage of time and changes in the market environment, in terms of market value, as shown in Table 6, only Xinmai Medical and Microelectronics have achieved market value growth, while the market values of the other three subsidiaries have all declined. Among the five subsidiaries that were spun off by minimally invasive technology, only one of them, the minimally invasive robot, accounted for more than 50% of the parent company's market value. Among the six minimally invasive companies, only Xinmai Medical achieved positive per share earnings and achieved profitability, while the other five companies were operating at a loss.

Table 6. Market Value of each Listed Company as of June 4, 2023

Listing date	Subsidiary			Parent company		
	Corporate name	PE	Market value/100 million yuan	Corporate name	PE	Market value/100 million yuan
2019/7/12	Cardiovascular Medicine	23.34	116.5	MicroPort	-7.69	261.7
2021/2/4	Xintong Medical B-B	-8.53	43.39			
2021/11/2	Minimally Invasive Robot B	-14.35	183.1			
2022/7/15	Minimally Invasive Brain Science	-323.78	78.89			
2022/8/31	Microelectrophysiology	-259.11	96.66			

In general, the continuous spin off of MicroPort's subsidiaries helps to increase the market value of the subsidiaries, but the subsequent operation of the subsidiaries is not ideal. The continuous spin off has led to the continuous aggravation of the losses of MicroPort, and the overall market value of the group cannot be effectively improved. As for the "trillion market value gene" of MicroPort, its strategy of splitting up its subsidiaries is not reflected. There may be an incentive for market value management behind the continuous splitting of Minimally Invasive Medical, but its effect is not ideal.

3.1.4. Motivation Analysis based on Management Incentive Theory

The spin off listing provides a more direct and diverse management incentive mechanism for subsidiaries. Before going public, the management of subsidiary companies often only received fixed salaries and performance bonuses, resulting in high agency costs. After the subsidiary is split and listed, the management of the subsidiary is granted shares that can be publicly traded in the Secondary market or options based on these shares, so that the interests of the subsidiary's managers and shareholders are compatible, thus achieving the consistency and effectiveness of equity incentives. In addition, listed companies can gain more public attention,

ISSN: 2688-9323

and as executives of listed companies, they will face direct scrutiny from external market investors, with more effective reputation incentive mechanisms in place. MicroPort has spun off its subsidiaries for several times and listed them, which has greatly improved the ability of the spin off group to recruit, motivate and retain key management personnel.

In 2021, Xinmai Medical announced the Restricted stock incentive plan, and proposed to grant 719700 Restricted stock to incentive objects at a price of 184.55 yuan per share, including directors, senior managers, core technicians, technical backbones and business backbones.

Xintong Medical launched a stock option plan in 2020, granting qualified participants up to 10.0797 million shares of the company's common stock with an exercise price of HKD 2.534 per share.

In addition, the other three subsidiaries have issued corresponding equity incentive plans before and after going public. The talent incentive plan for minimally invasive robots consists of two aspects. On the one hand, MicroPort, the controlling party, has granted share incentive plans and several stock options, reflecting the importance of the group company to the surgical robot business. On the other hand, minimally invasive robots have released new employee stock purchase plans. Minimally invasive neuroscience also launched a stock reward plan after its listing to attract talent, with the trustee allocating existing shares purchased in the market. Before going public, Microelectrophysiology established shareholding platforms such as Yuheng Investment, Shanghai Shenghui, and Edbury. Its equity incentive plan covers senior management personnel and core backbone personnel from multiple departments such as research and development, procurement, sales, finance, and human resources.

Table 7. Salary of Key Management Personnel of Various Companies in the Minimally Invasive Department from 2019 to 2022

Corporate name	2019	2020	2021	2022
MicroPort/10 thousand yuan	7177.25	30540.95	38832.17	16335.04
Cardiovascular Medicine/10 thousand yuan	1244.47	1449.69	1723.78	1505.55
Xintong Medical B-B/10 thousand yuan	434.6	999.1	1053.7	869.6
Minimally Invasive Robot B/10 thousand yuan		700.7	5182.2	6230.7
Minimally Invasive Brain Science/10 thousand yuan			1527.4	1160.4
Microelectrophysiology/10 thousand yuan				864.21

As shown in Table 7, the management of Xinmai Medical, Xintong Medical, and Minimally Invasive Robotics saw a significant increase in compensation after the company was spun off and listed. The management has been entitled to compensation under the equity incentive plan since the spin off. Among them, the salary of the management team of minimally invasive robots has increased by more than 7 times, due to the stock incentive plan and bonus sharing of minimally invasive robots that year. The compensation for the management of minimally invasive neuroscience has slightly declined due to the significant share based incentives received by the management in 2021. In terms of salaries, other benefits, and bonuses alone, the compensation for the management has increased. In summary, a spin off listing helps to link salary incentive plans with the company's market performance and financial performance, thereby effectively motivating management.

3.2. Performance Analysis of MicroPort Continuous Spin off

3.2.1. Analysis of Parent Company's Market Performance

As can be seen from Figure 2, the market performance of MicroPort before 2021 is generally better than that of the Hang Seng Index in Hong Kong, of which the stock price rose significantly in 2020, thanks to two rounds of bolstering by Hillhouse Capital, and MicroPort realized the

ISSN: 2688-9323

value revaluation. However, with the consecutive spinoffs of four subsidiaries going public in 2021 and 2022, the capital market response to this has been lackluster, accompanied by huge losses, and the market value of minimally invasive systems is also severely shrinking. Most people believe that frequent spinoffs blindly allocate financial pressure to the capital market, posing a serious suspicion of "hoarding money", which will inevitably lead to diluted earnings per share and poor market performance of the parent company.

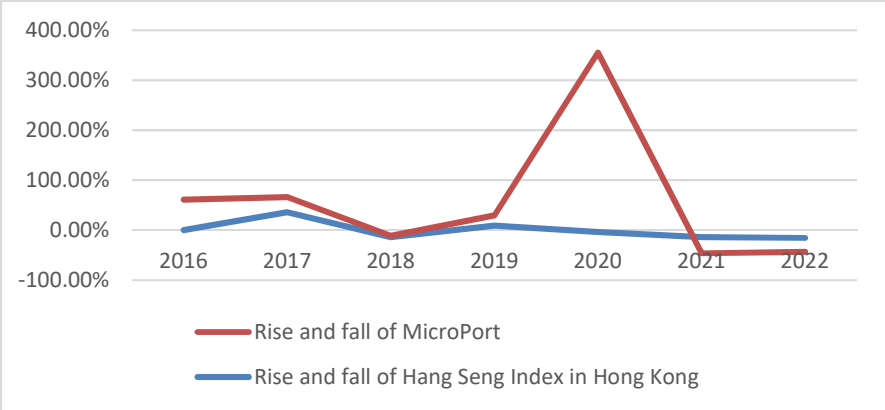

Figure 2. Comparison of Market Performance between MicroPort and Hang Seng Index in Hong Kong

3.2.2. Financial Performance Analysis of the Parent Company

Behind the "micro innovation system" is the leverage of Dongfeng, which allows non-profit enterprises to list on the Science and Technology Innovation Board and the Hong Kong Stock Exchange, to transfer the financial pressure required for research and development to the capital market. Since its listing in 2010, the financial performance of MicroPort has risen steadily, and both net profit and operating income have shown a continuous growth trend. But with the impact of the epidemic and the divestment of major businesses, the market share of enterprises is increasing, and operating revenue continues to rise. However, in contrast, the net profit of MicroPort is not optimistic. In 2020, there was a loss for the first time in five years, and after that, there was no profit, and the loss continued to increase. There was a situation of "increasing income without increasing profit". The profitability of the main business was poor. The continuous split of MicroPort did not play a positive role in the business performance of the enterprise.

Table 8. Analysis of MicroPort's Profitability in 2016-2022

Time	Operating revenue/100 million yuan	Operating revenue growth rate	Net profit/100 million yuan	Net profit growth rate
2016	27.05		1.045	
2017	29.02	7.28%	1.108	6.03%
2018	45.95	58.34%	1.262	13.90%
2019	55.36	20.48%	2.024	60.38%
2020	42.33	-23.54%	-14.57	-819.86%
2021	49.64	17.27%	-22.4	53.74%
2022	58.56	17.97%	-40.96	82.86%

From the perspective of solvency indicators, the solvency of MicroPort tends to be stable. With the multiple spin off of subsidiaries for listing and financing, the capital pressure of enterprises has been greatly relieved. Although the enterprise is in a state of loss, its cash flow is sufficient and its financial risk is relatively small.

ISSN: 2688-9323

Table 9. MicroPort 2016-2022 Solvency Index

Time	Current ratio	Current liability/Total liabilities	Asset liability ratio
2016	1.70	49.07%	55.27%
2017	2.16	42.85%	51.37%
2018	1.26	59.07%	58.50%
2019	1.72	45.74%	59.07%
2020	2.85	48.04%	43.79%
2021	4.37	25.28%	49.38%
2022	2.93	30.08%	55.12%

3.2.3. Analysis of Financial Performance of Subsidiaries

From Figure 3, it can be seen that among the five subsidiaries of minimally invasive surgery, only Cardiovascular Medical (arterial and peripheral vascular intervention business) has truly achieved profitability, showing a trend of gradually increasing profits. Minimally invasive neuroscience had a positive profit from 2019 to 2021, but showed a downward trend, with losses occurring in the first year after its listing in 2022. Micro electrophysiology shows a state of "losing and gaining every year", but its amount is very small. However, Xintong Medical and minimally invasive robots are in a continuous loss state, especially the highly favored minimally invasive robots by capital, which have poor performance, long research and development cycles, and worrying profitability. In this view, many businesses of MicroPort are still in the stage of domestic and international clinical trial development and early stage of commercialization, and will still focus on investment for a long time in the future. There is still a long time before the real harvest period.

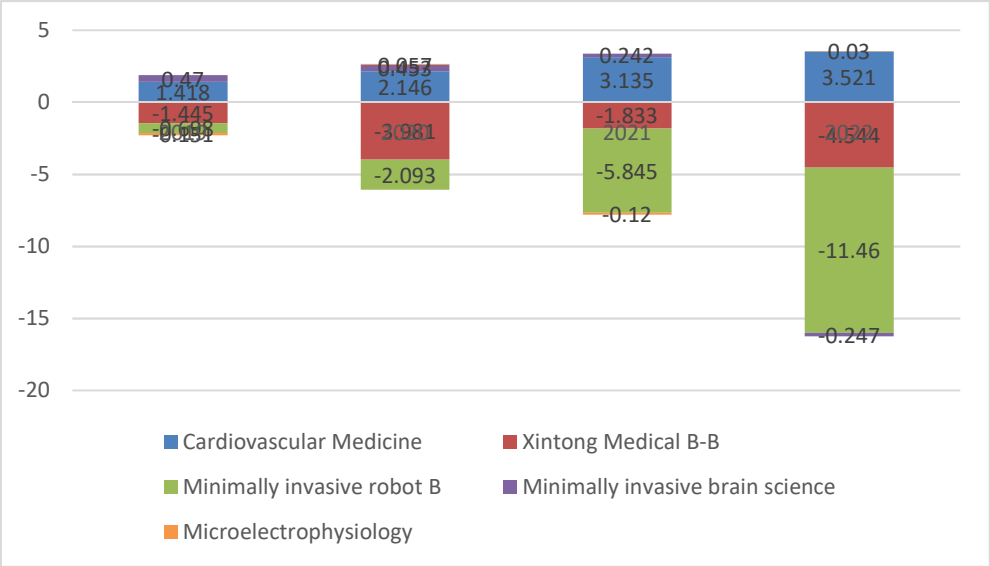

Figure 3. Net Profit of Subsidiaries of MicroPort from 2019 to 2022

As can be seen from Table 10, the debt paying ability of the five subsidiaries of MicroPort has significantly improved after listing. As far as Current ratio is concerned, Xinmai Medical has increased by nearly 5 times in the year of listing, and Xintong Medical has increased by more than 30 times. It can be seen that the spin off listing has brought a large amount of Working capital to enterprises, widened their financing channels, and greatly reduced their solvency. However, the Current ratio of each company is high. According to the financial data in 2022, Xintong Medical's Current ratio is more than 10, and the micro electrophysiological Current ratio is more than 20, Such a high Current ratio indicates that the current assets of the enterprise are too much relative to Current liability, the inventory backlog and cash holdings

ISSN: 2688-9323

are too large, and the enterprise's capital utilization efficiency is low. In terms of asset liability ratio, the asset liability ratio of each subsidiary is generally low, with lower financial costs, lower risks, strong debt repayment ability, and relatively stable operations. Among them, the asset liability ratio of Xintong Medical and Minimally Invasive Brain Science both showed a significant decrease in the year they were listed, indicating that the spin off listing has a significant improvement effect on the long-term debt repayment ability of enterprises.

Table 10. Solvency Indicators of MicroPort Subsidiaries 2018-2022

Project/Time		2018	2019	2020	2021	2022
Cardiovascular Medicine	Current ratio	2.96	14.33	10.44	9.001	6.928
	Asset liability ratio	19.59%	7.76%	10.33%	13.20%	12.66%
Xintong Medical B-B	Current ratio	0.67	0.47	0.5	15.81	12.82
	Asset liability ratio	32.02%	75.85%	131.04%	7.90%	8.25%
Minimally Invasive Robot B	Current ratio		1.36	6.62	8.93	3.38
	Asset liability ratio		66.33%	15.43%	14.39%	27.06%
Minimally Invasive Brain Science	Current ratio	1.23	0.8	5.7	4.5	5.27
	Asset liability ratio	35.92%	49.76%	52.54%	113.05%	18.24%
Microelectrophysiology	Current ratio	1.092	7.555	15.88	10.89	24.12
	Asset liability ratio	54.96%	16.89%	8.05%	11.84%	6.31%

4. Conclusion

This paper analyzes the internal motivation and subsequent development of MicroPort continuous separation, which is a supplement to the existing research. At the same time, it has important guiding significance for the practice of China's medical manufacturing enterprises to spin off their subsidiaries and go public. Based on the different motivation theories of split listing, combined with its subsequent financial performance and market performance, the following conclusions have been drawn:

First, there are two main reasons why MicroPort has split several subsidiaries in a row. On the one hand, it is to raise more research and development funds. Most of the companies in the "minimally invasive system" are in a loss making state, lacking in operational hematopoietic capacity, making it difficult to cover their extensive research and development pipelines and projects; On the other hand, in order to give more incentives to the executives of MicroPort and retain more talents, the spin off and listing of the subsidiary of Minimally Invasive Medical has indeed made some shareholders obtain high returns.

Second, in the years since the implementation of the plan of MicroPort spin off and listing, the performance of each subsidiary is different. In recent years, the parent company, MicroPort, has been in a continuous loss state. The heart and pulse medical business has remained stable and has continued to make profits for the company. The performance of minimally invasive brain science and micro electrophysiology has fluctuated slightly, while the minimally invasive robot is still in the stage of spending money on research and development. Xintong Medical is facing the problem of commercialization with huge investment.

Thirdly, the performance of the capital market in the continuous spinoff of the "minimally invasive" series has gone from initial "pursuit" to later "not buying". The stock prices and market value of each company in the "minimally invasive" series have not performed well, and

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with the gradual dilution of earnings per share, improper spinoff and listing may bring "hollowing out" to the parent company. The independence and business focus of the parent and subsidiary companies may become a focus of attention.

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