Performance Analysis of Microport Medical Spin Off Listing

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Abstract. As one of the management methods of shrinking enterprise assets, spin-off is conducive to optimizing and integrating enterprise resources and improving core competitiveness. This paper chooses Endovascular as the research object, which is the first share listed on the science and innovation board. It analyzes the general situation of the parent and subsidiary companies and the motivation of the spin-off. It also analyzes the market performance and financial performance of the parent and subsidiary companies by using the event research method and the financial index analysis method. The results show that, the spin-off meets the motivation of the parent company and is conducive to improving performance. In terms of market performance, the spin-off is conducive to the improvement of the market performance of the parent and subsidiary companies. The specific performance is that the stock price of the parent and subsidiary companies has a good trend after the spin-off, and the cumulative abnormal return rate has been obtained. In terms of financial performance, the impact of spin-off on the financial performance of the parent company is generally weak, but it can effectively improve the financial performance of subsidiaries.

Keywords: Spin Off Listing, Performance Analysis, event research method, financial index analysis method.

1. Introduction

MicroPort Science Co., Ltd., a company established in Shanghai and listed on the Stock Exchange of Hong Kong in September 2010, originated in May 1998. It is a leading high-end medical device group in the industry. At present, MicroPort Group has several subsidiaries. The company has already taken the lead in the field of heart stents in China. The company's products are sold throughout the world and continuously expands overseas markets. Currently, the company's overseas business has spread to over 100 countries and regions, covering over 20000 hospitals.

Shanghai Microport Endovascular Medtech (Gruop) Co., Ltd, a subsidiary of MicroPort, was established in August 2012. On July 22, 2019, it was officially listed on the Shanghai Stock Exchange and successfully registered on the Science and Technology Innovation Board. The core business of Endovascular is the research and development, manufacturing, and sales of aortic and peripheral vascular interventional medical devices. In the field of aortic interventional medical devices, the company is one of the domestic enterprises with a complete range of products, leading scale, and market competitiveness.

2. Definition of spin-off

Spin-off originated in the West, and Schipper and Smith defined spin-off as the initial public offering of shares of its wholly-owned subsidiaries by the parent company [1]. Powers argues that the parent company can sell part of its equity interest in the subsidiary at the time of the first public offering, but does not emphasize that the parent company must retain control of the subsidiary [2]. Ghosh pointed out that a spin-off is a public sale of equity at the time of listing of a subsidiary, obtaining a secondary premium for the equity, while still holding control over the subsidiary [3].

3. Motivation for spin-off

Allen & McConnell proposed that the parent company opens up new financing channels for the company through the spin-off, effectively reducing the asset-liability ratio of the parent and

subsidiary and easing the financing constraints [4]. Asad and Sebastien pointed out that before the subsidiary is listed, market investors can only obtain part of the information from the consolidated statements of the parent company, so it is difficult to predict the future development of the enterprise [5]. Chemmanur and He believe that spin-off will facilitate the transmission of information to the outside world, and at the same time can have a positive impact on the company's stock price [6]. Jie Chen proposed that through spin-off, not only can the parent company focus more on the core business, but also effectively improve the company's operational efficiency [7]. Yumeng Zhu and Yang Zhang found that the motivation for enterprise spin-off was mainly to adjust the business model, and the core model helped to improve the operational efficiency of enterprises [8]. Holmsrtom and Tirole found that when the parent company lists its spin-off subsidiary, the implementation of equity incentives to management or employees at the right time can effectively increase the level of internal incentives [9].

4. Event study method

4.1. Analysis of the market reaction of the spin-off to the parent

Taking the date of the first listing announcement of MicroPort Medical on July 3, 2019 as the event date, take the window periods of ten consecutive trading days before and after the event date, and then exclude the rest days and closing days within the window period. Finally, take the closing price of 21 trading days from June 18, 2019 to July 17, 2019 as the observation sample to study the impact of the spin-off event on the capital market of MicroPort Medical.

The real rate of return (R_{it}) is generally calculated in terms of the growth rate of the closing price:

$$R_{it} = (P_t - P_{t-1})/P_{t-1} \tag{1}$$

Among them, P_t refers to the closing price of the stock on day T, P_{t-1} refers to the closing price of a stock on day T-1. Since MicroPort Medical is listed in Hong Kong stock market, the market return rate is calculated using the closing price growth rate of Hang Seng Index in Hong Kong.

The market model is used to analyze and calculate the expected rate of return, and the formula is as follows:

$$R_{it} = \alpha + \beta R_{mt} + \delta_{it} \tag{2}$$

Among them, P_t is the closing price yield of the stock on day T, α is the intercept, which is the risk-free return rate, β is the regression coefficient, i.e., the market risk measurement coefficient, R_{mt} is the market index yield on day T, δ_{it} is the residual term. The normal rate of return model for MicroPort Medical in the event window estimation period is shown in Figure 1.

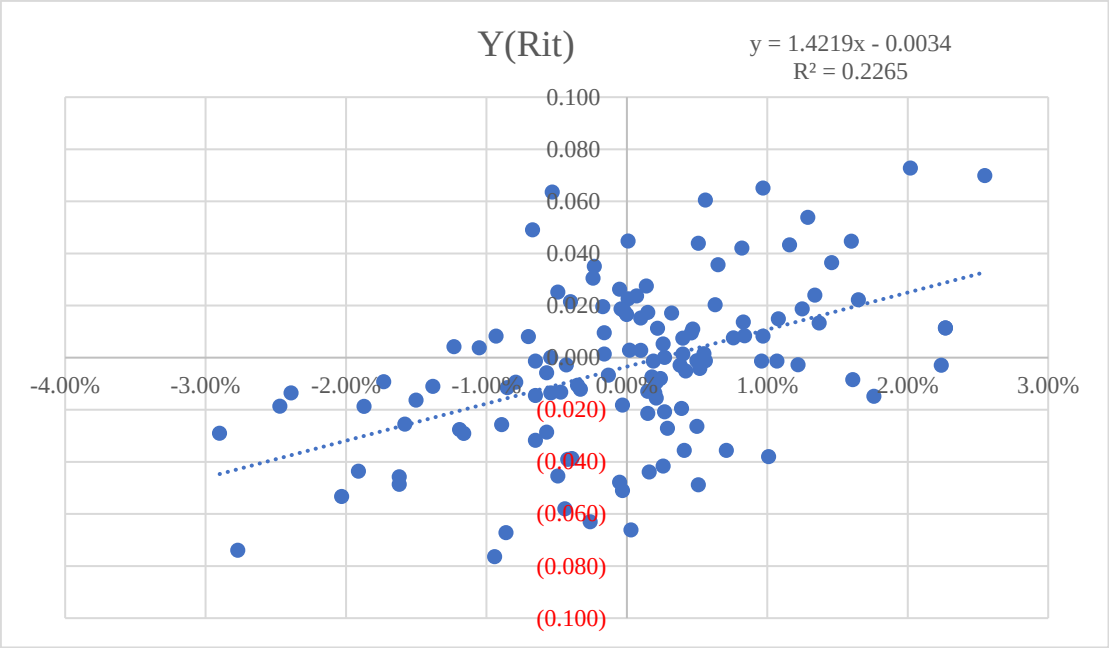

Fig. 1. MicroPort Medical normal rate of return model.

The actual rate of return on the day is used to differ from this normal rate of return to obtain the excess rate of return, expressed in the formula:

$$AR_{it} = R_{it} - R_{it'} \tag{3}$$

CAR_{it} represents the sum of AR from the event start day j to the event end day t, the formula is:

$$CAR_{it} = \sum_{t=j}^{i} AR_{it} \tag{4}$$

Table 1. Cumulative yield of AR and CAR in MicroPort Medical.

Trade date	T	Individual stock return	Market rate of return	Expected rate of return	AR	CAR
18/06/2019	-10	-0.0055	0.0100	0.0108	(0.0163)	(0.016)
19/06/2019	-9	0.0536	0.0256	0.0330	0.0206	0.0043
20/06/2019	-8	0.0105	0.0123	0.0141	(0.0036)	0.0007
21/06/2019	-7	-0.0052	-0.0027	(0.0072)	0.0020	0.0027
24/06/2019	-6	0.0192	0.0014	(0.0014)	0.0206	0.0233
25/06/2019	-5	-0.0274	-0.0115	(0.0198)	(0.0076)	0.0157
26/06/2019	-4	0.0035	0.0013	(0.0016)	0.0051	0.0207
27/06/2019	-3	0.0386	0.0142	0.0168	0.0218	0.0426
28/06/2019	-2	-0.0203	-0.0028	(0.0074)	(0.0129)	0.0296
02/07/2019	-1	0.0207	0.0117	0.0132	0.0075	0.0371
03/07/2019	0	0.0726	-0.0007	(0.0044)	0.0770	0.1141
04/07/2019	1	-0.0173	-0.0021	(0.0064)	(0.0109)	0.1032
05/07/2019	2	0.0032	-0.0007	(0.0044)	0.0076	0.1108
08/07/2019	3	-0.0463	-0.0154	(0.0253)	(0.0210)	0.0898
09/07/2019	4	-0.0101	-0.0076	(0.0142)	0.0041	0.0939
10/07/2019	5	0.0169	0.0031	0.0010	0.0159	0.1098
11/07/2019	6	0.025	0.0081	0.0081	0.0169	0.1267
12/07/2019	7	0.0032	0.0014	(0.0014)	0.0046	0.1313
15/07/2019	8	0.0388	0.0029	0.0007	0.0381	0.1693
16/07/2019	9	0.0078	0.0023	(0.0001)	0.0079	0.1773
17/07/2019	10	-0.0093	-0.0009	(0.0047)	(0.0046)	0.1726

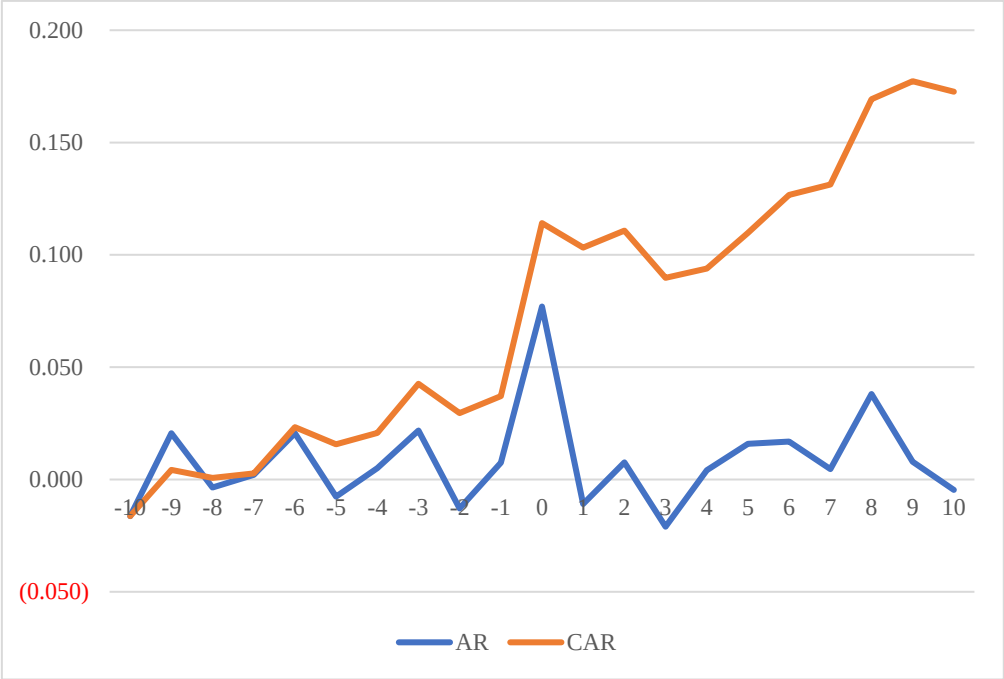

Fig. 2. MicroPort Medical's AR and CAR chart.

From Table 1 and Figure 2 above shows that the capital market has responded positively to the spin-off of MicroPort Medical, which can reduce the impact of information asymmetry, and the spin-off has a positive impact on the short-term financial performance of MicroPort Medical. Using the event research method, according to the change of the stock price of MicroPort Medical, the calculation of AR and CAR shows that the spin-off of Endovascular has brought positive effects to MicroPort Medical. So spin-off will bring improvement to the financial performance of MicroPort Medical in the short term.

4.2. Analysis of the market reaction of the spin-off to the subsidiary

The successful listing date on July 22, 2019 was used to take 10 trading days as the window period to calculate the excess yield and cumulative excess yield. The yield of the Shanghai Composite Index was selected as the expected normal rate of return of Endovascular, and the excess yield and cumulative excess yield were calculated according to the market adjustment model method.

Table 2. Cumulative yield table of subsidiary's AR and CAR.

Trade date	T	Individual stock return	Market rate of return	Expected rate of return	AR	CAR
22/07/2019	0		-1.27%	-1.27%	1.27%	1.27%
23/07/2019	1	-6.64%	0.45%	0.45%	-7.09%	-5.82%
24/07/2019	2	5.12%	0.80%	0.80%	4.32%	-1.50%
25/07/2019	3	2.40%	0.48%	0.48%	1.92%	0.42%
26/07/2019	4	-8.44%	0.24%	0.24%	-8.68%	-8.26%
29/07/2019	5	5.71%	-0.12%	-0.12%	5.83%	-2.43%
30/07/2019	6	15.94%	0.39%	0.39%	15.55%	13.12%
31/07/2019	7	-1.89%	-0.67%	-0.67%	-1.22%	11.90%
01/08/2019	8	3.73%	-0.81%	-0.81%	4.54%	16.44%
02/08/2019	9	1.70%	-1.41%	-1.41%	3.11%	19.55%
05/08/2019	10	0.21%	-1.62%	-1.62%	1.83%	21.38%

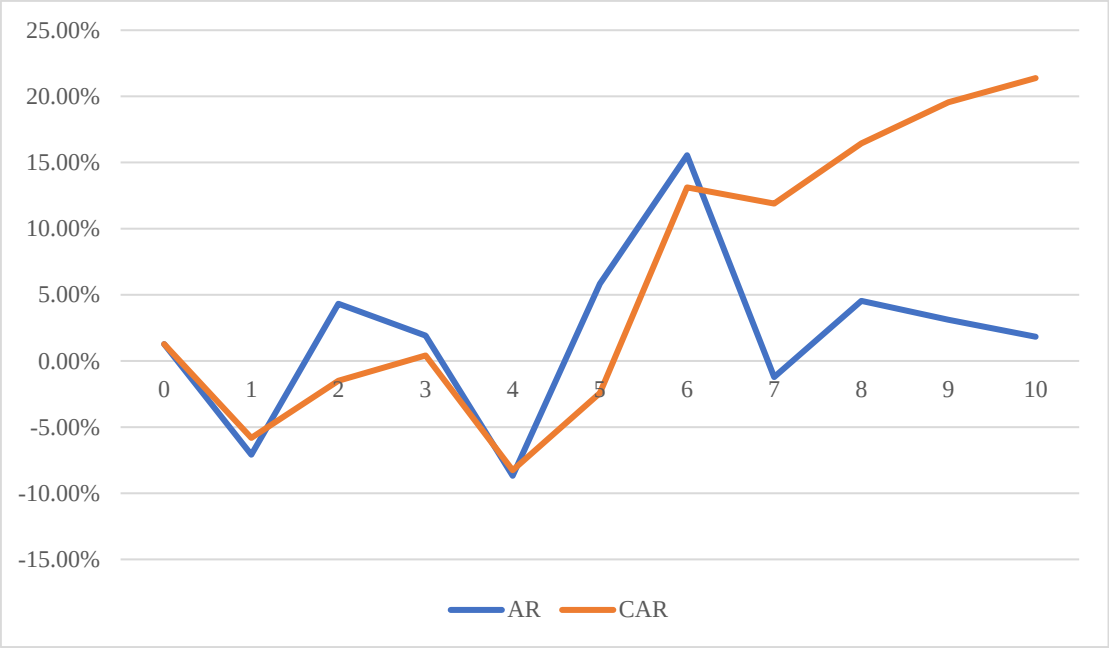

Fig. 3. Endovascular's AR and CAR.

As can be seen from Table 2 and Figure 3, Endovascular showed a trend of rising volatility after spin-off. The market has a positive attitude towards the listing of Endovascular, and it can be considered that the spin-off will have a positive impact on the market performance of its subsidiary.

5. Financial analysis

5.1. Profitability

Table 3. Profitability ratio.

Year		2017	2018	2019	2020	2021	2022
Gross Profit Margin (%)	MicroPort	71.68	70.2	71.13	67.21	63.16	59.7
	Endovascular	77.73	78.81	79.35	79.1	78.05	75.18
ROE (%)	MicroPort	5.13	5.66	9.62	-23.22	-21.12	-33.25
	Endovascular	40.71	50.15	24.67	18.66	23.27	22.21
ROA (%)	MicroPort	2.24	2.2	3.22	-9.4	-8.07	-14.72
	Endovascular	30.71	36.77	19.9	16.95	20.04	18.78

Table 3 shows that in 2019, the profitability index of MicroPort Medical continued to decrease, mainly because the company's coronary stent products were officially selected and collected, the average price dropped from about 13,000 yuan to about 700 yuan [10]. ROE and ROA of Endovascular's in 2019 decreased significantly, mainly because of the rapid increase in the company's net assets. Endovascular has incorporated a large amount of cash after listing, and the company's monetary funds were 49.9 million in 2018 and 889.2 million in 2019, which made the company's assets increase sharply.

After 2019, the indicators of MicroPort Medical showed a downward trend. At this time, the aortic and peripheral vascular intervention business of Endovascular's main business gradually began to play an important role in "blood transfusion" in MicroPort Medical. Due to the independent operation after the spin-off, it becomes the most profitable project of MicroPort Medical, which shows that the spin-off of Endovascular is a successful measure.

5.2. Operational ability

Table 4. Operational ability.

Year		2017	2018	2019	2020	2021	2022
Inventory turnover	MicroPort	1.22	1.41	1.24	0.98	1.08	1.05
	Endovascular	1.47	1.64	1.53	1.42	1.59	1.69
Current Assets Turnover	MicroPort	1.13	1.36	1.22	0.58	0.4	0.39
	Endovascular	2.01	2.26	0.6	0.43	0.52	0.65
Account receivable turnover rate	MicroPort	3.12	3.35	2.97	3.03	2.83	4.72
	Endovascular	7.78	9.84	11.58	11.33	11.22	9.09
Total Assets Turnover	MicroPort	0.53	0.61	0.55	0.32	0.23	0.20
	Endovascular	0.8	0.94	0.47	0.37	0.44	0.48

Table 4 shows that the financial performance of MicroPort Medical in recent years has not reached the expected effect. From 2019 to 2021, the operating capacity indicators of MicroPort Medical have declined, and rise slightly in 2022.

The reason for the decrease in current asset turnover and total asset turnover in 2019 was that the growth rate of operating revenue did not match the company's capital growth rate. In 2020 and 2021, due to the impact of the COVID-19, the number of outpatient operations in medical institutions will decrease, and the demand for the company's products will decrease, resulting in poor operational capacity indicators. In 2022, the epidemic situation will improve, management and control policies will be gradually liberalized, and MicroPort Medical's operation capacity indicators will improve.

The turnover rate of Inventory turnover and the turnover rate of accounts receivable of Endovascular kept at a high level, and the development was relatively stable. The significant decrease in current asset turnover and total asset turnover in 2019 was mainly due to the receipt of a large amount of monetary funds from financing after the spin-off.

In general, after the separation of Endovascular from MicroPort Medical, the development trend is good. Endovascular service separated from MicroPort Medical is not its core business, so in terms of operating capacity, the separation has little impact on the parent company itself and cannot significantly boost the performance of the parent company.

5.3. Liquidity

Table 5. Liquidity.

Year		2017	2018	2019	2020	2021	2022
Current ratio	MicroPort	2.18	1.24	1.68	2.83	4.37	2.93
	Endovascular	3.48	2.96	14.13	10.44	9.10	6.93
Quick ratio	MicroPort	1.65	0.84	1.29	2.41	3.84	2.40
	Endovascular	2.19	1.88	13.18	9.60	8.13	5.96
Gearing ratio	MicroPort	52.4	57.63	59.07	42.80	49.38	55.12
	Endovascular	16.16	19.59	7.76	10.33	13.20	12.66

Table 5 shows that the current ratio and quick ratio of MicroPort Medical are at a reasonable level in other years except 2018, which is relatively low. The reason for the decrease is the company raised 190 million dollars to achieve the layout of the heart rhythm industry in 2018. At the same time, the heart rhythm project has just been launched. Affected by upstream and downstream markets and other factors, the industry's income is very low, and the operating income of 152.7 million dollars cannot balance high investment and high borrowing.

The asset liability ratio of MicroPort Medical is relatively stable. In 2019, the company's financial leasing liabilities increased by 54.705 million dollars due to the change of the financial leasing regulations in the accounting standards implemented in Hong Kong, which also led to the ratio of asset liability ratio of 59.07% in that year.

The asset allocation of Endovascular is stable and the asset liability ratio is low. The solvency remains stable and the ability to repay current liabilities is strong.

5.4. Growth ability

Table 6. Growth ability.

Year		2017	2018	2019	2020	2021	2022
Operating profit growth (%)	MicroPort	4.2	9.53	-47.66	-688.82	-75.23	-72.66
	Endovascular	64.8	41.83	56.67	52.15	45.15	14.45
Operating revenue growth (%)	MicroPort	13.92	50.72	18.52	-18.24	20.02	7.99
	Endovascular	31.76	39.96	44.39	40.91	45.59	30.95
Total assets growth (%)	MicroPort	16.66	41.04	25.38	54.52	77.41	-8.82
	Endovascular	18.91	19.87	329.93	19.07	27.43	13.77

Table 6 indicates that in terms of development capacity, the growth rate of operating profit and operating revenue of MicroPort Medical declined sharply from 2019 to 2020, especially the sharp decline in the growth rate of operating profit, which decreased by 688.87% in 2020 compared with the previous year. That's because the outbreak of the COVID-19 in 2020, the implementation of the centralized procurement policy has a great impact on profits. At the same time, 2020 is also a year of rapid expansion of the total assets of MicroPort Medical. While external financing, part of the equity was sold, which made MicroPort Medical harvest $1.174 billion that year, so the total assets expanded rapidly. The main reason for the company's continuous loss in 2021 is the large amount of R&D investment in the surgical robot business.

After the split of Endovascular, the development ability index performed well. The main products of Endovascular have been widely recognized by the market. The competitiveness of the products has been continuously enhanced, and the production and sales have been steadily improved, maintaining a high level of growth.

Overall, the separation of Endovascular is not very helpful for the development ability of MicroPort Medical but has barely recovered the declining trend of operating profits of it.

6. Conclusion

The spin-off of MicroPort Medical is undoubtedly successful. In terms of market effects, the excess yield, cumulative excess yield and stock price have all increased slightly after the split, which has brought short-term positive effects to MicroPort Medical. In terms of financing effect, the spin-off alleviated the dilemma of high financial leverage of the parent company, and provided a new way for Endovascular to obtain funds. It also reduces the proportion of debt through the issuance of shares and optimizes the capital structure. In terms of business effect, Endovascular used the funds raised for R&D projects, expanded sales scale, and enhanced its professional operation level and core competitiveness. In the long run, for MicroPort Medical, the spin-off did not bring obvious positive effects to it. However, MicroPort Medical continues to spin off its subsidiaries and list, which can be inferred that the spin-off mainly plays a role in financing, which also serves as a way for such innovative enterprises to survive. Raise funds through spin-off to make up for the deficit in R&D investment and support the operation of the enterprise.

This paper simply starts from the data of financial indicators to analyze the impact of the spin-off on the financial performance of MicroPort Medical and Endovascular after the spin-off but lacks a comprehensive and systematic analysis on the overall profitability of the company, and the production and operation of the company will be affected by a variety of factors.

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