Market Reaction to Enterprise's Equity Carve-out Listing on the STAR Market - A Case Study of Tianneng Power

Zenan Wang

School of Economics and Management, Nanjing University of Science and Technology, Nanjing 210094, China

wangzn@njust.edu.cn

Abstract. Since the 1980s, numerous European and American companies have opted for a capital operation strategy involving carve-out and listing to facilitate healthy development and concentrate on their core businesses. In China, however, carve-out listings only commenced relatively recently, and the development process has been somewhat slower than in other countries. In response to the growing sophistication of China's capital market, the China Securities Regulatory Commission (CSRC) introduced a set of regulations governing the carve-out of subsidiaries of listed companies on the domestic A-share market in 2019. Since the inception of the A-share market and the issuance of the relevant rules, many eligible listed companies have announced their intention to undertake a carve-out listing. This has been particularly prevalent among technology and manufacturing companies. Consequently, carve-out listings on the STAR Market may emerge as a novel focal point for investment in China's capital market. As a pioneering enterprise in China's new energy power battery industry and a listed company on the H-share market, Tianneng Power's approach and trajectory towards carving out its subsidiary Tianneng Battery and listing it on the STAR Market serve as a paragon for other enterprises in the industry. This article examines the specific motivations of Tianneng Power to carve out its subsidiary and list it on the STAR Market. The event study method was employed to analyse the short-term market reaction of the listed company within 10 trading days before and after the issuance of the first carve-out announcement. The results indicate that the market responded favourably on the day of the event, with the stock market and investors displaying a positive attitude towards Tianneng Power's carve-out behaviour.

Keywords: Equity Carve-out, STAR Market, Motivation, Market Reaction.

1. Introduction

The carve-out listing represents a primary method of asset reorganisation within the capital market. The concept first gained currency in the financial markets of Europe and the United States towards the end of the 20th century. However, due to a delayed introduction to the market and strict regulatory constraints, the principal forms of corporate reorganisation in China during that period were mergers, acquisitions, and asset swaps. Implementing a carve-out listing enables companies to focus on their core businesses, streamline management, and address negative synergies. Furthermore, it injects capital vitality into the enterprise, ultimately achieving capital appreciation. Consequently, many Chinese companies aspire to enhance their market competitiveness and promote healthy development by implementing a carve-out listing.

To diversify their financing sources and enhance corporate governance, an increasing number of Chinese enterprises have begun to explore the potential of reorganising their assets through carve-outs and listings. In parallel, China has provided substantial support for the growth of the new energy industry in recent years. As a sector of strategic importance for the country, advancing the new energy vehicle industry is inextricably linked to national development. Consequently, the government has repeatedly issued fiscal subsidy policies to promote the application of new energy vehicles since 2009. In addition, the power battery industry, which provides the core components for new energy vehicles, has also experienced significant growth.

Nevertheless, as subsidies expanded, the power battery industry began to experience structural overcapacity. In 2015, the government issued a notice on subsidy phase-out, announcing that subsidies for new energy vehicles would gradually decrease from 2016 to 2020. This resulted in a deterioration of cash flows for downstream new energy vehicle companies and a weakening of the bargaining power of power battery suppliers in relation to vehicle manufacturers. The intensification of competition in pricing, coupled with the rise in upstream raw material prices and the extension of payment cycles due to changes in disbursement systems, resulted in significant financial difficulties for numerous power battery companies during the subsidy phase-out period.

In the context of the phase-out of subsidies, power battery companies must identify new avenues for growth, secure additional capital, accelerate technological innovation, and enhance their competitiveness in a saturated market. Fortunately, the establishment of the STAR Market in 2019 signalled a positive shift towards carve-out listings, providing new ideas for power battery companies. As one of the earliest lead-acid enterprises to deploy the lithium-ion battery business in China, Tianneng Power has consistently expanded its operations in lithium-ion batteries, new batteries, and battery recycling, establishing itself as a leading enterprise in the new energy battery manufacturing industry. Nevertheless, the phase-out of subsidies for new energy vehicles, the slow payments from downstream companies, and the resulting financial pressure and bad debt risks have presented Tianneng Power with certain challenges. Concurrently, the commissioning and operation of lithium batteries necessitate substantial capital investment, which has motivated the carve-out listing.

Tianneng Power is among the first companies in China to secure approval for a carve-out listing. There is a paucity of research examining companies listed on the Hong Kong stock market that have carved out the STAR Market. This case study is representative of a certain degree of typicality. Accordingly, this article comprehensively examines the specific process, motivations, and immediate market response associated with this carve-out listing. The case study offers valuable insights for other companies seeking to further optimise their carve-out effects and improve their operating conditions.

2. Literature Review

2.1. Studies on Equity Carve-Out Concepts

Schipper and Smith (1986) were the first researchers to conduct studies on equity carve-outs (ECOs), defining them as the initial public offerings of subsidiaries that are fully owned by the parent company to investors [1]. Vijh (1999) proposed that ECOs refer to the partial or full sale of a subsidiary, which is fully owned by the parent company, to the public [2]. Powers (2003) defined ECOs as the sale of partial ownership of a subsidiary through an initial public offering (IPO) by the parent company without emphasising the size of the parent company's ownership stake in the subsidiary [3]. Dasilas and Leventis (2018) proposed that ECOs combine elements from both initial public offerings (IPOs) and spin-offs. The fundamental distinction between spin-offs and ECOs lies in the fact that ECOs entail the sale of the subsidiary's shares, thereby generating new capital. In contrast, spin-offs do not involve a cash exchange [4].

As observed by Tang (2021), in China, the attributes of restructuring and financing are evident in the operations of ECOS. On the one hand, a subsidiary is transformed into an independent listed entity, which causes changes in the industrial structure, business scope, and shareholding structure within the Group. On the other hand, the subsidiary is financed by equity, and the parent company integrates funds through the sale of the subsidiary's shares [5]. Chen (2021) defined ECOs as companies that separate part of their business and go public independently. If successful, ECOs will promote the development of both the parent and subsidiary companies [6].

2.2. Studies on the Motivation for Equity Carve-Out

Allen and McConnell (1998) proposed that carve-outs represent the optimal solution for companies confronted with constraints such as restricted finance access and inadequate internal development resources. An equity carve-out enables the subsidiary to become an independent entity and obtain equity financing, thereby reducing the financial dependence on the parent company. In addition, the parent company can obtain funds through equity transfer, which alleviates the financial pressure on the group [7].

Nanda (1991) put forth the proposition that there exists an information asymmetry between the internal management of a company and investors in the external market, as well as between the management of a company and its employees. This is because information requires a certain amount of time to be transmitted, and there may be insufficient disclosure of information. This phenomenon can potentially adversely affect the enterprise, including an undervaluation of the enterprise. The market represents the most significant source of information about the firm. Consequently, in the event of information asymmetry, firms will employ equity carve-outs to enhance the firm’s value [8].

A study by Dasilas and Leventis (2018) demonstrated that both parent and subsidiary companies exhibited enhanced managerial efficiency and superior operational outcomes after equity carve-outs and core-gradation of their businesses [9]. Xiao and Geng (2019) proposed that equity carve-outs can facilitate the implementation of coreisation strategies. The results of the study indicate that the implementation of equity carve-outs can contribute to the development of core businesses and enhance the efficiency of firm management [10].

2.3. Studies of the Market Reaction

The majority of scholars employ excess return as a means of analysing the impact of equity carve-outs on share prices. Most scholars posit that an equity carve-out will elicit a positive market response to the parent company's share price. In their empirical study of 76 carve-outs, Schipper and Smith (1986) found that although the parent company ostensibly divested itself of its high-quality segment, it exhibited a cumulative excess return of 1.83% in the capital market following the carve-out [1]. Allen and McConnell (1998) expanded the sample size to 188 firms. They found that the cumulative excess return of the parent company in the three trading days after the announcement of the equity carve-out was approximately 2.12%. This also demonstrated that the market reacted favourably to the equity carve-out [7].

3. Tianneng Power Equity Carve-Out Case Analysis

3.1. Introduction of Parent and Subsidiary Companies

3.1.1 Introduction of Tianneng Power

Tianneng Power International Limited (Tianneng Power) was established in 1986 and listed on the Hong Kong Stock Exchange on 11 June 2007. At that time, it was acknowledged as "the inaugural power battery stock in China.” Throughout its 30-year history, Tianneng Power has evolved into a prominent lead storage battery enterprise, with a market share exceeding 40%. Furthermore, it has established an industrial conglomerate encompassing high-end environmental protection batteries, renewable new materials, and new energy batteries.

The Group has been developing its new energy battery business focusing on lithium-ion batteries in recent years. This has included producing, researching, and developing hydrogen fuel cells, solid-state batteries, and other new material batteries.

Currently, Tianneng is pursuing two main objectives. Firstly, the company focuses on the core business of batteries, extending the producer's responsibility, developing the business of recycling used lead and lithium-ion batteries, and establishing a closed loop for the entire life cycle of batteries. Tianneng is proactively investigating other environmentally conscious recycling businesses, including solid waste and hazardous waste disposal, to extend the upstream and downstream industrial chain.

3.1.2 Introduction of Tianneng Battery

Tianneng Battery, also known as Tianneng Battery Group Co., was established in 2003. The company's principal focus is selling lead storage batteries, gradually expanding into the lithium business. The company is a leading enterprise in the domestic battery industry, with the electric lightduty vehicle power battery business representing its principal area of expertise. It incorporates research and development activities. The company's activities encompass the production, sale, and distribution of a diverse range of battery types, including those used in electric special vehicles, new energy vehicles, automotive start/stop systems, energy storage solutions, 3C applications, standby power sources, fuel cells, and other battery-related products.

3.2. Motivation Analysis

3.2.1 Equity carve-out of battery segment to achieve specialisation

Since the establishment of Tianneng Power, the battery sector has consistently constituted the company's primary business. Tianneng Power created a separate listing for the battery sector to concentrate superior resources on developing its core business. The remaining group businesses operate in different sectors from the spun-off company, implementing different development strategies. The carve-out of Tianneng Battery allows it to concentrate its efforts on the battery field, thereby establishing a more coherent business structure within the group. This should lead to enhanced business consistency and operational efficiency.

3.2.2 The establishment of the STAR Market and the financing needs of subsidiaries

Before the carve-out and listing of Tianneng Power, the country implemented a series of subsidy policies for the new energy vehicle industry. Nevertheless, the reduction in subsidies has led to a heightened risk of capital chain rupture for numerous upstream and downstream enterprises in the new energy supply chain, which has also exerted a certain impact on the group's battery sector carve-out. Consequently, it is imperative to carve out subsidiaries to facilitate financing.

Furthermore, establishing the STAR Market has provided a development platform for Tianneng Power's carve-out and listing. The group has developed rapidly in lithium batteries and has demonstrated potential for further growth. Consequently, considering the group's current circumstances, the optimal course of action is to directly connect it with the capital market and spin off the battery sector to list on the STAR Market.

3.2.3 Improve competitiveness by adapting to industry developments

According to data from the industry, beginning in 2018, the shipment of lithium-ion batteries from China has continued to increase, with an increase of over 30%. This represents a significant opportunity for any battery company.

The separation of Tianneng Power's subsidiaries will enhance their research and development capabilities and production capacity, enabling them to capture a greater market share and achieve accelerated corporate growth.

3.3. Carve-out Process

On 10 August 2018, the parent company, Tianneng Power, announced an equity transfer. Tianneng Battery, an indirect wholly-owned subsidiary of Tianneng Power, acquired a 40% equity interest in Tianneng Energy, which produces and sells lithium batteries. Upon completion of the acquisition, Tianneng Energy became an indirect wholly-owned subsidiary of Tianneng Power. This was achieved by including the previous equity interests of Tianneng Power through Tianneng Battery (54% owned) and Tianneng Energy (6% owned).

On 9 November 2018, the Board of Directors of the parent company, Tianneng Power, announced the proposed equity carve-out of Tianneng Power Battery Group Limited as an A-share listing on a separate listing on the China Stock Exchange. The announcement indicates that the company has submitted the proposed equity carve-out proposal to the Stock Exchange of Hong Kong Limited for consideration.

On 18 April 2019, the Listing Committee of the Stock Exchange of Hong Kong granted Tianneng Power the authority to propose an equity carve-out in accordance with the guidelines set forth in the Listing Rules.

On 12 July 2019, the parent company, Tianneng Power, convened an extraordinary general meeting with the objective of approving a resolution to carve out the listing of Tianneng Battery Group Limited.

On 27 December 2019, the carve-out company, Tianneng Battery, submitted a formal application to the Shanghai Stock Exchange in relation to a proposed initial public offering of shares and listing on the STAR Market. On 30 December 2019, the Carve-out Company was granted a notice of acceptance by the Shanghai Stock Exchange.

On 6 July 2020, the Shanghai Stock Exchange granted approval for the initial public offering of A shares of the Equity Carve-out and listing on the STAR Market. On 15 December 2020, the China Securities Regulatory Commission approved the registration of the carve-out company, Tianneng Battery, for a proposed A-share listing on the STAR Market of the Shanghai Stock Exchange, with the stock name "Tianneng Shares".

4. Financial Effects Study

4.1. Analysis of Stock Price Fluctuation

The capital markets will respond in a positive or negative manner to major transactions of listed companies. Furthermore, fluctuations in stock price reflect the market's support or opposition to the company's resolutions to a certain extent. In accordance with the carve-out listing process previously outlined, on 9 November 2018, Tianneng Power initially proposed the carving out of its battery business segment and the subsequent independent listing of the carved-out company on the China Stock Exchange through an A-share listing. Consequently, an analysis was conducted on the closing prices of Tianneng Power over the five days preceding and following the announcement date in order to evaluate the extent to which investors had recognised this carve-out. The changes in the stock price before and after the announcement are illustrated in Fig. 1.

Figure 1. The fluctuations in the parent company's stock price prior to and subsequent to the announcement

A review of the closing price on the day of the initial announcement of the proposed carve-out listing reveals a fluctuating upward trend, indicating that investors maintain a positive attitude towards the carve-out of Tianneng Battery.

4.2. Analysis of the Parent Company's Stock Price Effect

This article employs the event study method to observe and analyse the extent of the impact following the carve-out of Tianneng Battery from Tianneng Power. This is based on the abnormal fluctuations in the stock price around the event date.

(1) The date of the event must be determined.

As previously indicated, 9 November 2018 (t=0) marks the point at which the market first became aware of Tianneng Power's intention to carve out Tianneng Battery for listing. Consequently, this date is selected as the event day. In comparison to selecting the actual listing date as the event day, this date allows for a more transparent comprehension of the investor sentiment towards this carve-out.

(2) It is necessary to determine the event window and estimation period.

The event window is defined as the 10 trading days preceding and following 9 November 2018, resulting in 21 trading days. In the event of a trading halt during this period, it will be automatically extended. In addition, the estimation period was set as the 120 trading days prior to the event day, which is [-130, -10].

(3) The expected return rate is to be calculated.

In accordance with the market model, the expected return rate of Tianneng Power during the estimation period is calculated using the following formula:

$$R_{it} = \alpha + \beta R_{mt} + \varepsilon_t$$

The constant intercept α represents the risk-free rate, while β denotes the stock's systematic risk. The error residual value ε_t is the residual error term. R_{it} represents the actual return rate of Tianneng Power stock at time t. R_{mt} represents the market's return rate at time t, which is calculated as the daily return rate of the Hang Seng Index during the same period. A linear regression was conducted on the actual return rate of Tianneng Power and the return rate of the Hang Seng Index during the selected estimation period, resulting in a regression fit graph, Fig. 2, and its linear equation is $y = 1.2127x - 0.0023$, α=−0.0023, β=1.2127.

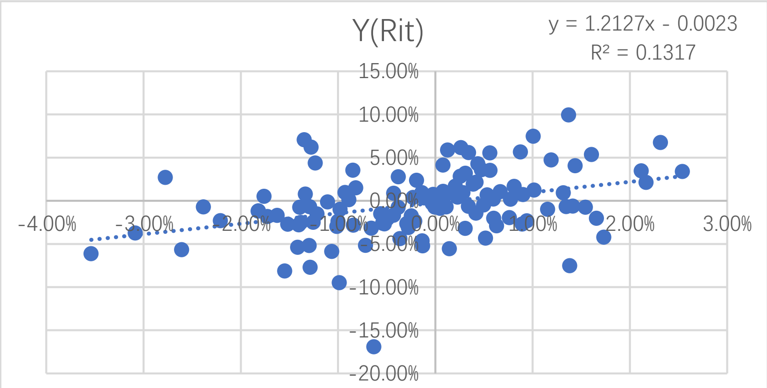

Figure 2. Regression Fitted Graph

The linear regression equation enables the calculation of the abnormal return (AR) and cumulative abnormal return (CAR). The results are presented in Table 1.

Table 1. AR and CAR during the event window

Trading day	Event window	Actual return	Market return	Normal return	AR	CAR
2018-10-26	-10	-0.16%	-1.11%	-1.57%	1.41%	1.41%
2018-10-29	-9	-2.92%	0.38%	0.23%	-3.16%	-1.74%
2018-10-30	-8	2.34%	-0.91%	-1.34%	3,68%	1.93%
2018-10-31	-7	2.45%	1.60%	1.71%	0.74%	2.67%
2018-11-01	-6	5.58%	1.75%	1.89%	3.69%	6.36%
2018-11-02	-5	3.63%	4.21%	4.88%	-1.25%	5.11%
2018-11-05	-4	-2.19%	-2.08%	-2.76%	0.57%	5.68%
2018-11-06	-3	-2.09%	0.72%	0.64%	-2.73%	2.95%
2018-11-07	-2	1.37%	0.10%	-0.11%	1.48%	4.43%
2018-11-08	-1	3.00%	0.31%	0.14%	2.86%	7.29%
2018-11-09	0	-3.64%	-2.39%	-3.12%	-0.52%	6.77%
2018-11-12	1	5.90%	0.12%	-0.08%	5.98%	12.75%
2018-11-13	2	1.00%	0.62%	0.53%	0.47%	13.23%
2018-11-14	3	-3.96%	-0.54%	-0.88%	-3.08%	10.15%
2018-11-15	4	0.59%	1.75%	1.89%	-1.30%	8.85%
2018-11-16	5	1.90%	0.31%	0.14%	1.76%	10.61%
2018-11-19	6	1.29%	0.72%	0.64%	0.65%	11.26%
2018-11-20	7	-3.55%	-2.02%	-2.67%	-0.87%	10.39%
2018-11-21	8	1.62%	0.51%	0.39%	1.23%	11.62%
2018-11-22	9	8.25%	0.18%	-0.01%	8.26%	19.87%
2018-11-23	10	-5.35%	-0.35%	0.66%	-4.69%	15.18%

The preceding calculations permit the construction of a trend chart of AR and CAR during the event window, as illustrated in Fig. 3.

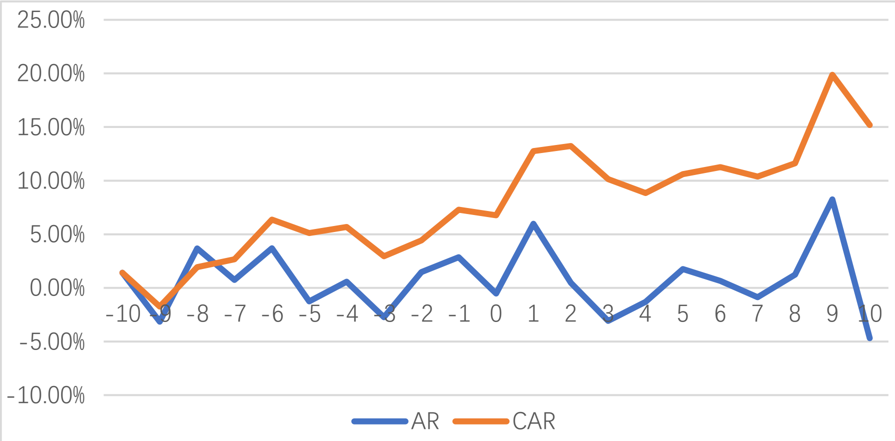

Figure 3. AR and CAR trend chart

A review of the trend chart reveals that during the period following the event, the cumulative excess return of Tianneng Power International exhibited a notable increase. This was accompanied by a positive response on the day of the announcement and a gradual upward trend. This suggests that Tianneng Power International's carve-out announcement created wealth for its shareholders. The capital market and investors demonstrated approval of Tianneng Power International's carve-out listing. Concurrently, the carve-out listing on the STAR Market also conveyed to investors that the parent company's value was undervalued, positively impacting both the parent and the subsidiary company.

5. Conclusion

For parent-subsidiary companies, a carve-out listing can facilitate a concentration on their core businesses. It is imperative that companies promptly adjust their development strategies in accordance with external policies and market changes. Furthermore, they must formulate financing plans that align with the capital needs of their various business segments, clarify the use of funds, and continuously optimise and enrich their industrial structure.

A carve-out listing can serve to reduce information asymmetry. When a company elects to pursue a carve-out listing, selecting high-quality assets to the greatest extent possible is prudent. This can enhance the brand effect, enable investors to see excellent development prospects, and thus obtain higher market value, providing convenience for future financing.

Furthermore, a carve-out listing positively impacts the internal governance of subsidiaries. Following a carve-out listing, companies can enhance their R&D and innovation capabilities, increase investment in R&D, and align employees' personal interests with the company's development goals. This facilitates the implementation of equity incentives, enhancing employees' work efficiency.

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