Hedge Strategy Analysis and Financial Analysis of Yunnan Baiyao

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Abstract. Plenty of companies actively employ financial instruments to hedge looming risks. Although hedging may reduce risks such as exchange rate risk and potential price risk, hedging is also likely to make companies suffer from loss. Options, one of the financial derivatives, bring holders rights instead of obligation to buy or sell the underlying asset at a fixed price. In 2020, Yunnan Baiyao declared that the group intended to conduct stock buybacks hedge the stock price risk of its repurchase plan. The cost of buyback was reduced in that this repurchase plan was combined with OTC put options. Yunnan Baiyao is the leading company in the pharmaceutical and health industry and its market value reached ￥134.24bn which ranked second among its peers as of 2021. Based on this stock purchase plan of Yunnan Baiyao, this article aims to analyze the financial situation of the company and the application of put options in the plan.

Keywords: Put option, Stock repurchase, Hedging strategy.

1. Introduction

In terms of financial instruments, companies always have futures and forward contracts to hedge potential risks and manage future cash flow. Also, they can buy call options to hedge the risk of price increase of raw materials and buy put options to hedge the risk of price decrease in merchandise inventories. Since 2016, an increasing number of companies that were highly related to agriculture combined their businesses with options and insurance. Over-the-counter options accommodate traders' more various needs, such as maturity date, strike price, and liquidity, through customization[1]. For Yunnan Baiyao, since this company partly produces the medical products with herbs planted by itself and it mainly puts a premium on the domestic market, the company is relatively less intended to hedge raw material risk and exchange rate risk, etc. In 2020, it applied put options in another business activity: stock buyback. In general, the company had operated well since it was listed in 1993. The author found that revenues and net income had been increasing steadily in the past decade. This enabled the company to assign capital to other plans. But one year after the stock buyback, in 2021 the net income slumped to 50% of the net income of 2020, while the share price also dropped by 30 yuan. Except for share price risk, financial ratios also indicate that the company has the potential risk of inventory accumulation.

Based upon the translation to mixed ownership, Yunnan Baiyao carried out a series of measures to better develop in the future. One of the policies the group adopted was retaining their talents through stock incentive plans. In a normal case, if the group does not have enough stocks by hand, it will choose to repurchase stocks from the secondary market. Repurchasing stocks with their own cash is actually conveying a positive signal that the share price is undervalued and is likely to rise in the future. However, since the stock price may fluctuate a lot in the short term, fixing the cost of the repurchase is indeed necessary. The application of OTC options in stock buyback has been adopted by many companies before, such as Hewlett-Packard, Pacific Gas & Electric, and Yahoo. And many previous studies concluded development of OTC market and illustrated the roles that options played in both operating and financial activities. Zhisheng Xue analyzed the current situation of the OTC market and the reasons why the OTC market established in 2013 in China was developing fast and required more regulation[2]. Liyuan Xiong analyzed the financial situation of Yunnan Baiyao from 2008 to 2019, pointing out the financial risks of the company[3]. As for stock buyback, Joshua Zelen examined arguments on stock buybacks and discussed whether to impose more restrictive regulatory frameworks [4]. Taking Yili as an example, Yuanyuan Zhang et al analyzed its repurchase plan from aspects including subsequent financial situations and Yili's specific employee incentive plan [5].

In this article, the author divides the article into 3 parts, which are an introduction to the company, an analysis of the financial situation, and an analysis of the hedging strategy respectively. Firstly, the reason and background for hedging the risk are illustrated. Then this article will analyze the outcome of the hedging strategy and its influences on the financial situation. Finally, the article will mention the residual risk and put forward some suggestions.

2. Firm description

2.1 Introduction of Yunnan Baiyao

Yunnan Baiyao Group Co.,Ltd was established in 1970. But its history can be traced back to 1902 when the core medicine formula was successfully developed. In 1993, it was listed on Shenzhen Stock Exchange and became the first company in Yunnan province to be listed. Later in 1999, the group adjusted its business pattern to build the regulation infrastructure better supporting the sustainability of the business. Not limited to merely producing traditional medicine with a core formula, the group has been enriching its product family to be the leading one in the health industry.

At the end of 2021, the market value of the group was ￥134.2bn. And its total assets had surged in the past 4 years from ￥30.38mn to ￥55.29mn. Free cash flow, which can assist in gaining scale, reached ￥4694mn in 2021[6]. This rapid expansion fully mirrored its capability to grow.

The company mainly focuses on producing and selling health-related products, which include medicines, medical equipment, raw medical materials, tea, and healthcare products. And it has 4 main business divisions: medicine, health products, herbs, and commercial business division.

Although revenues from the commercial business division are now comparatively more than those from other divisions, the company actually lay much emphasis on health products. These years, healthcare products have become a prominent catalyst for persistent growth. From 2012 to 2020, revenues from this division rose to ￥5387mn from ￥1800mn, accounting for 16% of total revenues. As for the herb division, though its operating revenues merely occupy a small part, production line of herb division is highly completed, ranging from herb plantation, herb production, and transportation, to imports and exports. The commercial business division brings a majority part of revenue every year. In 2021, the proportion of revenue from the commercial business division was 65%.

Then I collect the Stock price of this company and conduct the stock price analysis as follows.

Fig. 1 Historical share price of Yunnan Baiyao

In the past 5 years, the share price of YUNNAN BAIYAO fluctuated between ￥80 and ￥110 most of the time. During the pandemic, the company saw its share price tick upward. At the beginning of 2021, its share price surged to ￥140 and several months later reached ￥160.3. From then on, the share price started to drop. In the middle of 2022, it is stable at around ￥60.

2.2 Industry profile

As an emerging industry, the big health industry has great potential. In such an era when income per capita increases, people are more mindful of personal health care. Recently, the big health industry has branches such as medicines, medical equipment, health products, health consultation, and so on. Each enterprise in this industry is trying to discover possibilities to figure out how to cater to customers' needs. The traditional health industry focuses on medical treatment. On the contrary, the big health industry is combining cutting-edge technologies and aiming at constructing a wide business blueprint.

Except for the efforts of each enterprise in the health industry, the government has been carrying out policies to encourage enterprises in the industry to expand. And related policies were declared quite frequently in the past three years. These encouraging policies include supporting export business, cultivating medical personnel, and standardizing the production of medical material. In March 2022, the State Council also formulated guidance of the 14th Five-Year Plan, which further pointed out the goals and completed system of the health industry. Driven by the government’s policies and customers’ inclination to health care, the prospect of the health industry is highly expected.

3. Financial analysis

Table 1. Key financial indicators

Type		2019	2020	2021
Profitability	Revenue(￥k)	29665	32743	36374
	Net Income(￥k)	4184	5516	2804
	Gross margin(%)	28.56	27.75	27.15
	Net Margin(%)	14.07	16.83	7.69
Liquidity	Current ratio(x)	4.65	3.75	3.58
	Quick ratio(x)	3.37	2.42	2.88
Operating efficiency	Fixed asset turnover(x)	16	13	12
	Days sales of inventory(days)	184.67	173.01	131.57
Shareholder indicators	EPS(￥)	3.28	4.32	2.19
	ROE(%)	10.31	14.46	7.58

3.1 Profitability

The revenues of the company have been increasing at an average rate of 9% annually. During the past decade, revenues rose to ￥36.4mn from ￥11.3mn. Reasons are that the commercial medicine division continuously increases its market share and the healthcare product division has been making the notion of healthcare permeate into various products such as daily necessities and skin care products faster than competitors. Each of the four business divisions has distinct features. In this case, the product family is enriched and caters to customers in different age groups and revenues are rising steadily.

Gross margin is the ratio of gross profit and sales. The gross margin of the health industry is generally not high in that the prices of the products are relatively low to attract consumers to periodically purchase.

3.2 Liquidity

The current ratio and quick ratio are two measures of short-term liquidity. The average current ratio, which reveals the extent that current assets cover current liability, in the past 3 years of the company is 4, which is higher than 3.04 of Tong Ren Tang, one of its competitors. However, the high current ratio reveals that some inventories may be cumulated and such backlog leads to a lack of cash. A high current ratio also conveys the signal that cash and cash equivalents may account for a large proportion of current assets so that the company fails to make full use of cash. The average quick ratio in the past 3 years of the company is 3.22 while that of Tong Ren Tang is 1.91, Considering mentioned two ratios, it can be concluded that its ability to cover current liabilities is more robust than that of its main competitor but cash could have had better utilization. Since the inventories are stored in warehouses, they will lead to a huge amount of loss if the prices decrease. And expenses on inventory management and storage increase simultaneously [3].

3.3 Operating efficiency

Days' sales of inventory reflect how efficiently when Yunnan Baiyao manages its inventory. The company also carries out the business of transporting medicines and other healthcare products. Standing at 131.57 in 2021, this indicator fully reflects that inventories sit 131.57 days before they are sold. And days sales of inventory of its competitors are all more than 200 and even 300 days. After comparison, it can be concluded that Yunnan Baiyao managed inventories better than its competitors did.

3.4 Shareholder indicators

The company delivered robust EPS during the past years but saw EPS drop 50% in 2021. Although shares outstanding were reduced because of stock repurchase, EPS in 2021 was dragged down by decreased net income. And ROE had been reducing these years, dropping to 7.58% in 2021 from 28.94% in 2013 [7-8]. This reduction was partly attributed to fierce competition in the health industry since 2014. From then on, the company grew slowly and the PE ratio also slightly decreased [9]. As for listed pharmaceutical companies, ownership concentration has a significant effect on their performance. In this case, the incentive plan influences profitability by changing the equity structure[10].

To sum up, Yunnan Baiyao needs to emphasize improving its inventory management and make better use of capital to generate more profits. For instance, the company can increase research and development expenses to create new medicine. By keeping the patent, the company will receive exclusive profits. Under the pressure and influences of the COVID-19 pandemic, Yunnan Baiyao is supposed to react flexibly to risks.

4. Share price hedging strategy

Shares repurchase has caused growing debates over its effects. On the one hand, buybacks prevent companies from investing in their workforce and existing operations [7]. On the other hand, buybacks actually benefit some employees, insiders, and investors who merely intend to hold the stocks for a short period of time. And Warren Buffett, chairman and Chief Executive Officer (CEO) of Berkshire Hathaway, believes that share repurchase is the best use of corporate cash[8]. No matter whether a company uses cash or get into debt to conduct share repurchase, repurchase essentially reduces assets and makes the company exposed to more financial risk because debt paying ability may be weakened [9].

Yunnan Baiyao intended to repurchase shares for its stock incentive plan. After the company finished its translation to mixed-ownership, it planned to distribute shares to its employees according to their performance. In 2020, the company started a share repurchase plan, repurchasing up to 16.7mn shares. It was a win-win policy in that it incentivized existing employees, attracted more talents, and reduced shares outstanding. Besides, repurchase can also convey to investors signals that the share price is undervalued and the company is confident that share price will rise in the future.

4.1 Risk of hedging

Since the cost of repurchase relies on the dynamic stock price, the company needs to accurately make a judgment on whether it is the proper time to repurchase. From the previous stock price trajectory, the line graph revealed that the range of share prices of Yunnan Baiyao was comparatively wide. To eliminate the risk of hedging that came from the potential increase of its stock price, Yunnan Baiyao deployed OTC put options, one type of financial derivative, to control the actual cost of repurchasing stocks. If the stock price increase 2￥, for instance, before the company is just about to repurchase shares, the loss generated will be 32.4mn.

4.2 Analysis of hedging strategy

Table 2. Outcome of hedging

Date	Shares(K)	Cost of repurchase(k ￥)	Cost of each share(￥)	Income of derivative(K ￥)	Profit margin of derivative(%)
2020/0617	335.4	30130	89.84	25820	8.57%
2020/0630	2306.6	209080	90.64	15990	7.65%
2020/1222	11429.5	1276130	111.65	116020	9.09%
2020/1225	2628.5	292570	111.31	-1150	-0.39%
TOTAL	16700	1807900	108.26	133450	7.38%

Due to the fact that Yunnan Baiyao did not repurchase shares quite often, the repurchase plan in 2020 is taken as an example. The report revealed by Huajin Securities illustrated that the strategy was selling OTC put options and repurchasing shares simultaneously, aiming mainly at reducing the cost of repurchase. If the stock price increased, the profit from financial derivatives would reduce the cost of repurchase. If the stock price decreased, the expense deduction on repurchase would offset the loss from financial derivatives. The company closed its position at the end of 2020. The put option premium was 8%.

As for the 2 deals in June 2020, the share price kept increasing so that the counterpart did not exercise the options and the company gained option fees. On Dec 22, 2020, the profit achieved by the company was also option fees. However, from Dec 22 to 25, the share price of Yunnan Baiyao increased by 1.93%. When the company needed to purchase put options to close this position, it suffered from a loss of merely a small amount of money because of an increase in share price. In general, the company achieved ￥133.45mn profit by using financial derivatives to hedge the risk of share price and successfully repurchased 16.7mn shares.

5. Conclusion

As more and more financial derivatives are coined, it is wise for the companies to take various derivatives to hedge the risks during operation. In 2020, the average cost of buyback was ￥108.25 per share. Although stock buyback was not a frequent event for the company, the group used cash to repurchase. To avoid short-term liquidity risk, it was wise for the group to bear the certain risk and try to reduce overall buyback expense. And Yunnan Baiyao saved ￥133.45mn after hedging the stock price risk and reducing the average cost to 98.12 yuan, while the maximal price was ￥115 per share.

Contributing shares to employees still benefits the long-term development of Yunnan Baiyao. Financial performance in 2021 was below expectations and the share price did increase in the first six months but generally reduced by ￥30. However, the future trajectory of the company relies on a wide range of factors. It was not a great beginning but as the leading company in the health industry, Yunnan Baiyao is expected to perform better.

This paper has some deficiencies indeed. Firstly, this paper did not probe cases of other companies which also combined put options with stock buyback in order to encourage employees or just reduce stock dilution. It merely compared the financial situation of companies instead of applications of derivatives. Second, the author did not analyze the possibility to hedge the share price risk with other kinds of financial derivatives. Third, this article did not mention how the strike price of the put option was derived. Taking mentioned problems into consideration, the author's further research goals are as follows. First, the author will further analyze other cases of stock buyback and focus on applications of financial derivatives and outcomes. Then the author will figure out whether Yunnan Baiyao is able to use other financial derivatives to hedge the share price risk. Last, the author will use models such as the Black-Scholes model and Monte Carlo Simulation to price the put options.

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