Research of Sany based on financial analysis and PE valuation

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Abstract. In recent years, a modern industrial system is taking shape and the construction machinery industry is generally showing an upward trend in its dynamics. Sany Heavy Industries, a leading player in China's construction machinery industry, has performed well in the industry with its excellent and unique strategy despite suffering from the impact of the Covid 19 epidemic. Based on the industry environment of the machinery industry, this paper conducts analysis from the DuPont method and valuation using the P/E method to study the financial level and operating conditions of Sany Heavy Industry and make data-supported recommendations for future investment. The research in this paper shows that Sany has a relatively promising outlook and strong competitiveness, and is worthy of continued attention and long-term value investment.

Keywords: Sany; Dupont Analysis; P/E valuation.

1. Introduction

At present, China's industrial development is entering a new historical period. Domestically, rising factor prices are weakening the international competitiveness of labour-intensive industries, while the capacity for industrial innovation has increased significantly and a modern industrial system is taking shape. From an international perspective, a new round of scientific and technological revolution and industrial change is flourishing, the global industrial landscape is changing, and the "reverse globalization" is undercurrents.

Xiao Dayong uses both cross-sectional and longitudinal comparative methods in his study of China's equity investment market, and dissects corporate finance by examining typical elements, which has very important insights into the analytical approach and article structure of this paper [1]. This article will analyze the data of companies in the machinery industry and the financial data of Sany in the last three years, which is more feasible from a theoretical point of view.

Sany Heavy Industry Co., Ltd. is mainly engaged in the research and development, manufacturing and sales of construction machinery, including concrete machinery, excavation machinery, lifting machinery, piling machinery, road construction machinery, and is the largest construction machinery manufacturer in China and the fifth largest in the world. Its name originates from the corporate vision of "creating a first-class enterprise, creating first-class talents and making first-class contributions", which was put forward at the early stage of the establishment. This paper examines Sany's strategy to maintain its leading position in the current uncertain economic climate and provides a reference for investment decisions through an analysis of Sany's intrinsic value.

2. Method

2.1 DuPont Analysis

This paper uses the DuPont Analysis to analyse Sany's financials and the P/E Valuation method to value Sany's stock. The data of Sany Heavy Industry was obtained from the company's annual report and Morningstar.com.

The DuPont analysis uses the relationship between several key financial ratios to analyse a company's financial position in a comprehensive manner. It is a classical method used to evaluate the profitability of a company and the level of return on shareholders' equity, and to evaluate the performance of a company from a financial perspective. The basic idea is to decompose a company's

return on net assets into a number of financial ratios product by product, which helps to analyse and compare the business performance in depth. The relevant formulas for DuPont Analysis are as follows.

$$\begin{gathered}\text{DuPont Analysis}=\text{Net Profit Margin}\times\text{Asset Turnover}\times\text{Equity multiplier}\\ \text{Net Profit Margin}=\text{Net income/Revenue}\\ \text{Asset Turnover}=\text{Sales/Total Assets}\\ \text{Equity multiplier}=\text{Total Assets/Shareholder's Equity}\end{gathered} \tag{1}$$

2.2 P/E Valuation

In the P/E valuation method, market capitalisation is positively related to future earnings and negatively related to the risk of the business, and the valuation of the business changes according to the annual business earnings per share. The P/E ratio represents the time to return on a capital investment, also known as the static payback period of the investment. The relevant formula for P/E valuation is as follows.

$$\begin{gathered}\text{P/E ratio}=\text{share price/Earnings per share}\\ \text{Target company's valuation}=\text{Target company's EPS}\times\text{P/E industry average}\end{gathered} \tag{2}$$

3. Porter's five forces analysis of industry

3.1 Perspective on bargaining power of suppliers

At present, suppliers are mainly divided into raw material suppliers and component suppliers. The bargaining power of raw material suppliers is low. Small scale suppliers could provide some of the construction machinery components, but key components such as hydraulic pumps are mostly relying on a few high-end large-scale companies. As a result, for small enterprises the suppliers bargaining power is high, for large scale enterprise purchasers, bargaining power is relatively low.

3.2 Perspective on bargaining power of purchaser

Developed individual users, by virtue of their flexible and efficient operation, have been taking up an increasing proportion of the consumer group, gradually becoming the leading consumer category. The reasons for the decline in excavator prices are twofold: on the one hand, the market is becoming increasingly saturated and competitive, and on the other hand, the increasing maturity and rationality of customers has increased their bargaining power.

3.3 Perspective on threat of new entrants

Construction machinery enterprises seek development through brand image deepening, sales network consolidation, and product R&D skills innovation and so on, which cast the barriers of brand reputation, new technology and unique channels to prevent the invasion of small, scattered or poor enterprises. In addition, the scale of investment is a threshold to enter the industry, so without a certain scale enterprises will not be able to take advantage of new technology, expansion of production and reduced costs of scale effect.

3.4 Perspective on threat of substitutes

Due to the special features, designs and functions of mechanical engineering in related industries, they have good development opportunities and are unlikely to be replaced in the long term even with similar processes.

3.5 Perspective on rivalry among competitors

As the subordinate market of different products in the aspects of technology, production, equipment, spare parts and so on have low specialization, the user groups are likely to be similar, so

it is relevant easier to enter the sub-markets within the same industry. As a result, in recent years, the enterprises significantly expand the product lines to seize the market and prompt diversification of the construction machinery, thus intensify the competition.

In addition, enterprises in the industry continue to expand the scale of production and sales, making the industry more concentrated. Several core enterprises dominated the market share and sales of construction machinery, establishing a leading position, while small and medium-sized enterprises were seriously squeezed. Therefore, the future development trend of the industry is more like the survival of fittest, the market is concentrated to the leading enterprises, with small and medium-sized enterprises tending to be eliminated.

4. Sany's strategy

Founded in 1994, Sany Heavy Industries Co., Ltd. has grown to become the largest construction machinery manufacturer in China and the sixth largest in the world. First of all, Sany firmly promotes the internationalization strategy and implements the business strategy of "we are the main player, local operation and service first". In the face of industry cycle fluctuations, Sany's internationalization strategy has played a good role in risk diversification, and its high quality products and services have gradually been recognized by the international community [2].

Secondly, Sany has actively implemented its digitalisation strategy with data-driven business innovation and industrial upgrading. It has released the "Internet of Everything" themed Evision 12.0, an intelligent management software for equipment that connects customers from purchase, use, after-sales, to the whole process of used machines, promoting cost savings and fault prediction. At the same time, the construction of the "Lighthouse Factory" has deeply integrated the workshop logistics management system, remote control system and intelligent handling robots system, which has significantly increased the overall automation rate of the company's processes [3].

In addition, Sany has implemented an integrated strategy. Sany has improved its excavator marketing strategy [4].By establishing nationwide service outlets, Sany has achieved a global service commitment of 2 hours to site and 24 hours to completion for construction equipment, enabling products to enter the market in all regions of the country quickly and combine both quality and quantity.

Finally, Sany has implemented differentiation strategy. There is an annual increase in the amount of innovation investment [5].The company adheres to the concept of "everything comes from innovation" and invests more than 5% of its annual sales revenue in R&D, forming a cluster R&D and innovation platform system and having several national enterprise technology centres to achieve product differentiation.

5. DuPont Analysis

The DuPont analysis system can clearly sort out the intrinsic relationship between various financial indicators and thus understand the current operating conditions of the company [6].In this paper, we analyse the profitability of Sany Heavy Industry based on its financial data for three years and the DuPont financial analysis system. The relevant financial data of Sany Heavy Industry and the financial indicators of DuPont analysis are shown in the table 1.

Table 1. DuPont Analysis of Sany from 2019 to 2021.

	2021	2020	2019
Net income	12,325,681	15,864,990	11,620,746
Sales	106,113,346	99,342,410	75,665,462
Total Asset	55,555,613	42,975,849	33,598,878
Total Liability	33,584,414	19,619,168	8,271,905
Shareholder's equity	21,971,199	23,356,681	25,326,973
	2021	2020	2019
Net Profit Margin	0.12	0.16	0.15
Asset Turnover	1.91	2.31	2.25
ROA	0.22	0.37	0.35
Equity multiplier	2.53	1.84	1.33
ROE	0.56	0.68	0.46

5.1 Analysis of Net Profit Margin

Sany's return on net assets were relatively stable in 2020 and 2019, reaching 16% in 2020, but dropped to 12% in 2021, which indicated a decline of 25%. In 2021, the company's net profit fell despite that there was an increase in operating income. An analysis of the environment in which the company was operating at the time shows that the main reason for this dynamic was the increase in costs: selling costs rose by 25.6% year-on-year, with administration costs by 25.9% and research and development costs by 30.4%. The increase in selling costs was due to the blockade imposed on some areas in China during the epidemic, which led to a significant increase in transportation costs. The gradual rise in labour costs during the epidemic led to an increase in overheads. And Sany has been increasing its investment in research and development in order to develop its core competitiveness, which has led to a year-on-year increase in research and development costs [7].At present, compared with the companies in the same industry, Sany's operating income and net profit are still in the forefront, indicating its competitiveness.

5.2 Analysis of Asset Turnover

Sany's asset turnover ratio was relatively stable in 2020 and 2019, reaching 2.31 in 2020, but declined to 1.91 in 2021, which indicated a decrease of 17%. As shown in annual financial statement data, accounts receivable rose by 878.6% in 2021, which was mainly due to the fierce competition in the market, Sany had to increase the proportion of credit sales in order to win customers, expand market share and enlarge sales [8].

5.3 Analysis of Equity multiplier

Sany's equity multiplier rose gradually from 2019 to 2021. Compared to 2019, the equity multiplier for 2021 has increased by 90.2%. This was mainly due to a significant increase in Sany's long-term borrowings and deferred revenue. Long-term borrowings rose 112% in 2021 compared to the previous year. Deferred revenue rose by 152.4% compared to the previous year, mainly due to the government subsidy funds received by Sanyi such as subsidies for industrial park construction projects and special funds for technical renovation projects.

6. P/E Valuation

P/E ratio is an indicator of the relationship between a company's market value and its profitability. An analysis of earnings per share from the last five years of public data shows the highest of 47.93 and the lowest of 7.46, which is relatively volatile. Earnings per share are on an upward trend until 2021 and a downward trend from 2021 to now. The five-year average for the stock is 17.44, which is consistent with the current share price.

6.1 Selection of competitors

Sany's 2021 Annual Report, among other sources, shows that its main competitors in the machinery heavy industry include Caterpillar, Zoomlion, Komatsu, Terex, Guangxi Liugong, XCMG and Shantui [9].

After obtaining the corresponding data in the annual report on the company's official website, I used the prevailing exchange rate for the currency system comparison in order to better compare the competitor's information. These companies are settled in both US dollars and Renminbi, and as Sany is settled in Renminbi, so I have converted these figures using the 31 December 2021 exchange rate. After calculating and comparing these eight companies with relevant ratios, I found that not all industry competitors were applicable to the stock valuation, as some companies had large gaps in earnings and debt service due to the epidemic, while some companies far exceeded Sany in terms of company scale, hence the need for data screening of the eight companies [10]. The following are the criteria and results of the data screening in table 2.

Table 2. Data of eight company and criteria.

		Sany	Caterpillar	Zoomlion	Komatsu	Terex	Liugong
Financials	Revenue (Bil)	106.87	325.19	67.13	2189.51	24.43	28.7
	Gross Margin %	26.1	29.43	23.61	26.54	19.49	17.47
	Operating Income (Bil)	13.22	43.89	7.46	169.73	2.07	1.56
	Operating Margin %	12.37	13.49	11.11	7.75	8.44	5.45
	Net Income (Bil)	12.03	41.41	6.27	106.24	1.38	1
	EBITDA	16.2	70.44	9.25	309.67	2.32	1.59
	Diluted EPS	1.43	75.48	7.4	112.39	19.59	0.51
	Cash & Cash Equivalents (Bil)	29.59	59.02	21.57	243.13	1.70	6.41
	Working Capital (Bil)	32.29	86.83	39.58	996.42	5.40	9.77
	Operating Cash Flow (Bil)	11.9	45.94	2.62	354.13	1.82	0.85
	Free Cash Flow (Bil)	1.6	30.18	-0.29	172.58	1.44	-0.07

		Sinomach	XCMG	Shantui	Average	Median	Standard
Financials	Revenue (Bil)	43.95	84.33	9.16	319.92	67.13	10~1000
	Gross Margin %	7.43	16.24	14.35	20.07	19.49	
	Operating Income (Bil)	0.96	6.06	0.29	27.25	6.06	0.5~50
	Operating Margin %	2.19	7.18	3.17	7.91	7.75	
	Net Income (Bil)	0.26	5.61	0.21	19.38	5.61	0.25~50
	EBITDA	1.06	8.28	0.45	46.58	8.28	1~100
	Diluted EPS	0.18	0.71	0.15	24.20	1.43	0.1~100
	Cash & Cash Equivalents (Bil)	5.94	23.24	2.74	43.70	21.57	1~100
	Working Capital (Bil)	5.42	22.04	2.42	133.35	22.04	3~300
	Operating Cash Flow (Bil)	3.14	8.07	0.43	47.66	3.14	0.5~50
	Free Cash Flow (Bil)	2.5	4.8	0.37	23.68	1.6	—

As shown in the chart, the standard for revenue is 10 billion to 1000 billion, operating income is 0.5 billion to 50 billion, net income is 0.5 billion to 50 billion, EBITDA is 1 to 100, Diluted EPS is 0.1 to 100, cash&cash equivalents is 1 billion to 100 billion, working capital is 3 billion to 300 billion, operating cash flow is 0.5 billion to 50 billion. Komatsu and Shantui are found to be not complied

with the standards, above or below the criteria after comparison when others are in line with the criteria. As a result, based on financial data such as revenue, net income and operating cash flow, as well as key ratios, I have decided to select Caterpillar, Zoomlion, Terex, Guangxi Liugong and XCMG as Sany's competitors for the industry average and median.

6.2 Results

For the accuracy of the valuation, I have selected TTM (lagged 12 months data) data as at 1 June 2022. The following data in table 3 are the results of the TTM calculations.

Table 3. TTM valuation.

	Sany	Caterpillar	Zoomlion	Terex	Liugong	Sinomach	XCMG	Average 6	Median 6
EPS	0.96	79.63	5.50	21.91	0.39	0.17	0.67	15.60	0.96
P/E	17.50	18.22	6.97	10.96	16.15	47.13	8.09	17.86	16.15
Valuation	16.80	1450.78	38.34	240.14	6.30	8.01	5.42	17.15	15.50
Stock Price	16.95	1450.50	5.32	237.87	6.38	7.75	5.29	247.15	7.75

After excluding Sany's data, I calculated the industry average P/E ratio of 17.15 through the formular, which is a bit higher than Sany's valuation, which indicates that there is slight room for the company's expected value to rise. From the above data, it can be seen that the valuation of Sany's share price calculated on a TTM basis is between approximately 15.50 and 17.15, while the actual share price of Sany is around 16.95, and therefore Sany's share price can be considered as a reasonable valuation result, which shows that it is worthy of long-term value investment.

7. Conclusion

Sany is a relatively well-developed and typical company in the mechanical engineering industry. This paper takes Sany as the subject of study, conducts an introduction to the background of the industry and evaluates whether it is worth investing in using methods such as DuPont analysis and P/E valuation. Sany's core competitiveness mainly comes from its innovation-focused strategy, and even though it has suffered from the epidemic, it is still at the forefront of the industry with good financial levels and operating conditions, which shows that it has potential growing space and is worthy of long-term value investment.

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