

Corporate Value Assessment based on the EVA Model and Relative Valuation

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Abstract. As a risk-averse commodity, gold has seen new development opportunities in retail due to factors (e.g., geopolitical risks and conflicts, economic uncertainties, and inflation). Consequently, more and more investors are focusing on the gold retail industry. Evaluating the value of gold retail enterprises using scientific and effective methods is of great significance to both managers and investors. Therefore, this paper uses Chow Tai Seng, a Chinese gold retail enterprise, as a case study. Based on the company's development characteristics, we employ the EVA absolute valuation method and relative valuation methods including P/E, P/B and P/S ratios for valuation. The study finds that although its EVA values show a general downward trend from 2019 to 2023, they remain positive, indicating that the company's overall development is still on track. The development of enterprise valuation theory has gone through the MM (Modigliani-Miller) theory, Free Cash Flow Valuation Model, and the Capital Asset Pricing Model, among others. These theoretical models have gradually improved, and the theoretical system is continuously evolving. By summarizing and reviewing valuation theories and methods, this paper employs the DDM for valuation and the P/E ratio method under relative valuation based on the company's development characteristics. Combining these two valuation methods with the company's actual financial data and relevant value theories, the company can attract investors and address undervaluation by increasing its exposure through modern multimedia channels and enhancing data transparency.

Keywords: Gold market; geopolitics; corporate performance.

1. Introduction

With the international situation being turbulent, especially with the escalating tensions between Russia and Ukraine, global financial markets are facing significant uncertainty. Due to gold's safe-haven nature, the expectation of currency devaluation and inflation, and the increase in market uncertainty, gold prices have been continuously rising. In recent years, international gold prices, as an important indicator of the financial market, have experienced frequent fluctuations [1]. Their sustained decline has had a profound impact on the gold industry in various countries, providing researchers with abundant material for study. As one of the world's largest gold markets, China's gold industry has experienced continuous development fluctuations in recent years. An in-depth study of the impact on China's gold industry not only helps to understand the operation laws of the financial market but also provides important references for the development of China's gold industry [2]. Therefore, this article aims to explore the development and changes in China's gold industry before and after the Russia-Ukraine war, specifically selecting the five years from 2019 to 2023. It analyzes the market supply and demand conditions, industrial chain supply, gold price fluctuation factors, and investor sentiment of three listed companies in the Chinese gold market: Chow Tai Seng, Chow Tai Fook, and China National Gold Group. By analyzing the financial data disclosed by these companies in recent years and using relative valuation methods and EVA analysis, the article explores the reasons and impacts of these fluctuations [3].

Firstly, factors such as China's economic slowdown, international geopolitical tensions, and global financial market volatility directly affect gold demand and prices [4]. Secondly, China's government policy adjustments, financial market reforms, and gold market regulations also influence the

development of the industry to some extent [5]. Finally, the article proposes suggestions for companies to cope with the fluctuations in the gold industry, including establishing effective risk management mechanisms, actively exploring the domestic market, reducing dependence on the international market to lower sensitivity to international gold price fluctuations, and strengthening cooperation with financial institutions to obtain more flexible financing support, thereby enhancing industry competitiveness and improving risk management capabilities. The article provides theoretical support and practical guidance to better adapt to the current impact of gold price fluctuations.

Chow Tai Fook Jewelry Group is a well-known Hong Kong jewelry retailer established in 1929. The company is renowned for its high-quality gold and silver jewelry, especially in the bridal jewelry market. Chow Tai Fook has an extensive retail network, with stores not only in mainland China, Hong Kong, and Macau but also in other regions of Asia. Additionally, Chow Tai Fook is committed to expanding its sales channels through e-commerce platforms, offering a diverse range of jewelry products and services. Chow Tai Seng Jewelry is another well-known Chinese jewelry brand, primarily engaged in the production and sales of gold jewelry. Established in 1991, Chow Tai Seng is loved by consumers for its exquisite craftsmanship and modern designs. The company focuses on brand building and market expansion, continuously innovating its product line to meet the needs of different consumers. Chow Tai Seng offers a variety of products, ranging from traditional gold jewelry to fashionable diamond and colored gemstone collections. China National Gold Group is one of the largest gold production enterprises in China, covering gold exploration, mining, processing, and sales. In addition to its gold business, China National Gold is also involved in the production and sales of platinum, silver, and other precious metals, making it a diversified mineral resources company. The company has a strong influence in both domestic and international markets, dedicated to providing high-standard products and services to meet the needs of global customers.

2. Data and Method

Economic Value Added (EVA) is a method used to evaluate a company's financial performance. Its basic principle is to calculate the company's net operating profit after tax (NOPAT) and the cost of the capital required to obtain that profit. Under current market economic conditions, all assets, including equity assets, may incur opportunity costs. EVA assesses the management performance of the company from the shareholders' perspective and can comprehensively reflect the company's operational status. The formula for EVA used in this paper is $EVA = NOPAT - (\text{Adjusted Capital} \times \text{Weighted Average Cost of Capital (WACC)})$. Calculating Net Operating Profit after Tax (NOPAT), $NOPAT = \text{Net Profit} + (\text{Interest Expense} + \text{R\&D Expenses} - \text{Adjustment for Non-recurring Gains}) \times (1 - 25\%)$. This formula calculates the net operating profit after tax by adjusting the net profit with interest expenses, R&D expenses, and non-recurring gains, and then applying the tax effect. Calculating Capital Investment When calculating the adjusted capital, the data for current liabilities is the sum of payables, other current liabilities, and specific payables from Zhou Dashing's annual report. Other indicators such as average shareholder's equity, total liabilities, and construction in progress are directly selected from the company's annual report for calculation [6].

Calculation of Weighted Average Cost of Capital (WACC). Cost of Debt Capital: The cost of debt capital uses the loan interest rate for 6 months to 1 year as stipulated by the People's Bank of China. Cost of Equity Capital: the cost of equity capital is calculated using the Capital Asset Pricing Model (CAPM). The formula is as follows: $\text{Cost of Equity} = \text{Risk-Free Rate} + \text{Risk factor} \times \text{Market Risk Premium}$. The risk-free rate is derived from the yield on ten-year government bonds. The beta value uses the risk coefficient of the gold industry. The market risk premium is represented by GDP growth rate. Based on Chow Tai Seng financial statements from 2019 to 2023, the proportion of debt capital and equity capital to the total capital each year is calculated, along with the weighted average cost of capital (WACC). For these calculations, the corporate income tax rate is fixed at 25%.

The relative valuation method involves selecting comparable companies with similar business operations and activities to the target company, determining the average price multiples of these comparable companies, and then applying the average multiples to the target company to calculate its market value. The relative valuation method includes the price-to-earnings (P/E) ratio, price-to-book (P/B) ratio, and price-to-sales (P/S) ratio. The P/E ratio is an investment return measure expressed as the ratio of a company's stock price to its earnings per share (EPS). It indicates the time required for investors to recover the current or expected earnings cost of the company. The P/B ratio is the ratio of a stock's price to its book value. This method is suitable for companies with large and relatively stable net asset scales. Since net assets per share are cumulative and generally positive, this method can also be applied to companies facing operational difficulties or even bankruptcy risks. The P/S ratio is the ratio of a stock's market price to its sales revenue. A lower P/S ratio indicates a higher investment value of the company's stock. Price-to-earnings Ratio (P/E) = Market price per share/earnings per share (EPS). The price-to-book ratio (P/B) is calculated as: P/B =Market Price per Share/ Book Value per Share (BVPS). Book Value per Share (BVPS) represents the value of a company's equity on a per-share basis. It is calculated by dividing the company's total equity (assets minus liabilities) by the number of outstanding shares. The formula is: BVPS =Total Equity/Outstanding Shares. The price-to-sales ratio (P/S) is calculated as: P/S = Market Capitalization / Total Sales Revenue of the Past Year. Market capitalization, or market cap, refers to the total value of a company in the open market. It is calculated by multiplying the total number of a company's shares by the current stock price [7].

Table 1. Chow Tai Seng's NOPAT calculation results from 2019 to 2023.

| Year | 2023 | 2022 | 2021 | 2020 | 2019 |
|---|-------|---------|---------|--------|---------|
| Net Profit | 13.13 | 10.87 | 12.22 | 10.13 | 9.91 |
| +Financial Expenses | 0.27 | 0.13 | 0.06 | 0.07 | 0.17 |
| +Income Tax Expense | 3.96 | 3.33 | 3.69 | 3.1 | 3.01 |
| Earnings Before Tax | 17.36 | 14.33 | 15.97 | 13.3 | 13.09 |
| 1-Income Tax Rate | 75%6 | 7596 | 759 | 75% | 759 |
| Net Operating Profit After Tax (NOPAT) | 13.02 | 10.7475 | 11.9775 | 9.975 | 9.8175 |
| +Increase in Asset Impairment Losses | 0.08 | 0.01 | 0.59 | 0.1 | 0.12 |
| +Changes in Fair Value Gains | 0.07 | -0.28 | -0.14 | 0.11 | 0.19 |
| +Capitalized R&D Expenditures | 0.27 | 0.13 | 0.06 | 0.07 | 0.17 |
| +Post-tax Non-recurring Income | 0.45 | 0.63 | 0.29 | 0.67 | 0.77 |
| -Deferred Income Tax Liabilities | 0.05 | 0.13 | 0.16 | 0.11 | 0.11 |
| -Deferred Income Tax Assets | 0.05 | 0.13 | 0.16 | 0.11 | 0.11 |
| Net Operating Profit After Taxes (NO PAT) | 13.7 | 11.6675 | 12.9475 | 10.715 | 10.7275 |

Table 2. Chow Tai Seng's total capital from 2019 to 2023.

| Year | 2023 | 2022 | 2021 | 2020 | 2019 |
|--------------------------------------|-------|-------|-------|-------|-------|
| Total Shareholder's Equity | 63.85 | 60.49 | 57.97 | 53.9 | 47.43 |
| Total Liabilities | 16.28 | 15.58 | 12.19 | 12.66 | 11.79 |
| Adjustment Items: | | | | | |
| +Increase in Asset Impairment Losses | 0.08 | 0.01 | 0.59 | 0.1 | 0.12 |
| +Deferred Income Tax Liabilities | - | - | 0.12 | - | 0.15 |
| -Deferred Income Tax Assets | 0.05 | 0.13 | 0.16 | 0.11 | 0.1 |
| +Capitalized R&D Expenditures | 0.27 | 0.06 | 0.27 | 0.19 | 0.17 |
| +Post-tax Non-recurring Income | 0.45 | 0.43 | 0.29 | 0.67 | 0.77 |
| +Construction in Progress | 7.21 | 5.05 | 3.75 | 3.05 | 1.71 |
| Adjusted Total Capital | 72.77 | 70.4 | 66.66 | 63.02 | 57.07 |

3. Result & Discussion

3.1. EVA Analysis

Based on the financial information from 2019 to 2023, this paper forecasts the next five years and, considering the development prospects of the gold jewelry industry, reasonably predicts a stable and slow upward trend after 2023. If the period from 2024 to 2028 will be a period of perpetual growth, we set the perpetual growth rate for Chow Tai Seng at 3% from 2024 onwards. The evaluation date is set as December 31, 2023, with a total amount of RMB 7.277 billion on the evaluation date. The results of the projection process are given in Table 1, Table 2, Table 3 and Table 4.

Table 3. Chow Tai Seng Weighted average cost calculation results from 2019 to 2023.

| Year | 2023 | 2022 | 2021 | 2020 | 2019 |
|----------------------------------|--------|--------|--------|----------|--------|
| Proportion of Debt Capital | 20.32% | 20.49% | 17.37% | 19.0196% | 19.90% |
| Proportion of Equity Capital | 79.68% | 79.51% | 82.63% | 80.99% | 80.10% |
| Weighted Average Cost of Capital | 12.16% | 13.50% | 8.22% | 6.76% | 7.79% |

Table 4. The result of the EVA value is shown in the figure.

| Fiscal Year | 2023 | 2022 | 2021 | 2020 | 2019 |
|----------------------------------|---------|----------|---------|--------|---------|
| Net Operating Profit After Taxes | 13.7 | 11.6675 | 12.9475 | 10.715 | 10.7275 |
| Adjusted Total Capital | 72.77 | 70.4 | 66.66 | 63.02 | 57.07 |
| Weighted Average Cost of Capital | 12.169% | 13.5096% | 8.22% | 6.76% | 7.79% |
| EVA Value | 4.85 | 2.16 | 7.47 | 6.45 | 6.28 |

The net operating profit after tax (NOPAT) for the period from 2019 to 2023 is calculated to be 7.05%, and the average growth rate of total assets is 6.3%. Therefore, we assume that the average growth rate of NOPAT for 2024 will be 7.05%, and the average growth rate of total assets will be 6.3%. Meanwhile, the average growth rate of total capital will decrease by 1.5% annually. The weighted average cost of capital (WACC) for 2024 and beyond is set at 10%. Using these assumptions, we can calculate the present value for the forecast period. The intrinsic value of the company is calculated as $\text{Intrinsic Value} = 7.277 \text{ billion} + 2.78 \text{ billion} + 5.109 \text{ billion} = 14.597 \text{ billion RMB}$. The market value is calculated as $\text{Market Value} = 1.083 \text{ billion} \times 16.98 = 18.389 \text{ billion RMB}$.

The forecasted intrinsic value of the company is lower than its current market value, indicating high market enthusiasm for Chow Tai Seng. From the fluctuations in the company's value, it can be observed that the stock price has experienced multiple significant fluctuations. It can be inferred that after long-term stock price volatility, the company's value will settle into a stable range, reflecting the true intrinsic value of the company. EVA considers the cost of capital, emphasizing the true economic value added by the company's operating activities to shareholders by subtracting the cost of capital. This allows EVA to provide a more accurate assessment of corporate performance, focusing on long-term value creation rather than just short-term profitability. By emphasizing the growth of economic profit, EVA helps companies develop long-term strategies, promoting sustainable development with a long-term orientation. EVA also directly links corporate performance with the cost of capital and shareholder value, making it a tool for incentivizing management. It encourages management to take actions that improve EVA and ultimately increase shareholder value. For company management and investors, EVA is a relative measure that can be compared with industry standards or competitors. This enables companies to better understand their position in the industry and identify areas for improvement.

3.2. Relative Valuation Method Analysis

The analysis data is shown in Table 5, Table 6 and Table 7. At the same time, the three indicators are illustrated in Fig. 1. The relative valuation method relies on the market's pricing efficiency and the reasonableness of the pricing of comparable companies. When selecting comparable companies, they should have similarities in size, business model, and growth potential to avoid data distortion.

Market sentiment and the macroeconomic environment can cause fluctuations in valuation multiples, affecting the accuracy of conclusions. The company's financial reports must be transparent to ensure data reliability and enhance the credibility of the valuation. Overall, considering these factors, the use of the relative valuation method requires caution and should be combined with other methods to obtain more comprehensive results.

Table 5. Chow Tai Seng's P/E values from 2019 to 2023.

| Year | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------|----------|----------|--------|----------|----------|
| EPS | 1.37 | 0.93 | 1.12 | 1.01 | 1.21 |
| Stock price | 12.69 | 17.77 | 17.78 | 14.03 | 15.18 |
| P/E | 9.262774 | 19.10753 | 15.875 | 13.89109 | 12.54545 |

Table 6. Chow Tai Seng's P/B value from 2019 to 2023.

| Year | 2019 | 2020 | 2021 | 2022 | 2023 |
|-------------|----------|----------|----------|----------|---------|
| BVPS | 108.27 | 128.42 | 150.88 | 157.21 | 171.68 |
| Stock price | 12.69 | 17.77 | 17.78 | 14.03 | 15.18 |
| P/B | 0.117207 | 0.138374 | 0.117842 | 0.089244 | 0.08842 |

Table 7. Chow Tai Seng's P/S value from 2019 to 2023.

| Year | 2019 | 2020 | 2021 | 2022 | 2023 |
|---------------------|-------|-------|----------|----------|----------|
| General capital | - | - | 10.96 | 10.96 | 10.96 |
| Stock price | 12.69 | 17.77 | 17.78 | 14.03 | 15.18 |
| Total market value | - | - | 194.8688 | 153.7688 | 166.3728 |
| Total Sales Revenue | 54.39 | 50.84 | 91.55 | 111.18 | 162.9 |
| P/S | - | - | 2.128551 | 1.383062 | 1.021319 |



Fig 1. The change trend of P/E, P/B and P/s value of Chow Tai Sheng from 2019 to 2023.

The relative valuation method has several limitations: firstly, it relies on the market's pricing efficiency and rationality, which can lead to distorted valuations in times of market irrationality. Secondly, if the comparable companies differ significantly in size, business model, and other aspects, it may result in inaccurate outcomes. Additionally, market sentiment and macroeconomic factors can cause significant fluctuations in valuation multiples. Finally, if the company's financial data is inaccurate or lacks transparency, it will severely affect the reliability of the valuation.

4. Suggestions and Implications

The Russia-Ukraine war has inevitably affected the gold and Bitcoin markets. The impact on the gold market is mainly due to investors viewing gold as a safe-haven asset. This situation is reflected in gold prices. About a week after the war began, the price of gold exceeded \$2000 per ounce [8]. Jewelry consumers are generally non-professional buyers, lacking systematic knowledge or understanding of jewelry. They often focus only on superficial aspects, such as whether the gold is pure and whether the design meets their preferences. When purchasing such valuable items, consumers worry about the authenticity, quality, or price reasonableness of the products. This mindset significantly influences consumer purchasing behavior. Currently, the primary sales channel is offline, but online channels are expected to bring new growth. Most consumers prefer buying from jewelry counters in large malls or brand-exclusive stores.

As consumer demand for online shopping and personalized customization increases, enhancing the online shopping experience and exploring new sales channels to drive digital transformation is essential [9]. Considering the saturation of the Chinese market and the growth potential of international markets, expanding international business by opening overseas stores, participating in international jewelry exhibitions, and collaborating with international retailers can be beneficial. Increasing investment in innovation and research, and collaborating with designers, craftsmen, and artists to develop new products that meet fashion trends and consumer demands, continuously launching new designs and products is key to maintaining competitiveness [10].

5. Conclusion

By conducting an EVA analysis, we can assess whether Chow Tai Seng has successfully created economic value added. The results show that the EVA of Chow Tai Seng has been positive over the past five years, indicating that the company's operating activities have generated profits exceeding the cost of capital, thereby creating shareholder value, and achieving long-term value growth. However, there have been significant fluctuations in EVA, and earnings have declined in the past two years. This decline is influenced by the uncertainty of the operating environment and consumer confidence factors. Sales of inlaid products have significantly decreased year-on-year, while the consumption market for gold products has maintained a high level of prosperity. The economic returns of these business segments have been lower than expected, necessitating a reassessment. It may be necessary to reallocate capital investment or implement incentive plans to reward management and encourage them to continue enhancing the company's value creation capabilities. Through relative valuation analysis, it is evident that since 2021, Chow Tai Seng's price-to-earnings (P/E), price-to-book (P/B), and price-to-sales (P/S) ratios have all declined. This indicates that the market has become more cautious about the company's profitability and growth prospects. Fluctuations in profitability and asset value, as well as potential declines in competitiveness, are among the reasons for the decline in these indicators. Additionally, industry and macroeconomic factors may also influence valuation levels, leading the market to adopt a conservative outlook on the company's future performance.

Author Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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