



The Research on Pricing of the Company's Share Price

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ABSTRACT

This paper is an example of CATL, whose share price has recently experienced significant volatility. From there, we explore the link between accounting statements and stock prices. We have applied a stock return model to explore the relevance of five factors to the company. Meanwhile, the main sources of demand for accounting research in the capital markets are fundamental analysis and valuation. Current directions in capital market research topics include market efficiency tests and accounting information, and the value relevance of financial reporting. These studies may be useful for capital market investment decisions.

Keywords: *Financial markets, Stock return, Pricing models, Accounting*

1. INTRODUCTION

It is well known that one of the main purposes of accounting is to help investors predict the future cash flows of a company. If accounting data are information about underlying values and changes in values, they should be correlated with changes in stock prices.

We first designed the return model build, which is based on a valuation model of Zhang's real options. Specifically, Zhang shows that since the value of equity depends on two fundamental attributes of operations, namely size and profitability, valuation is equivalent to predicting the size and profitability of future operations. The return on equity as a change in value is therefore related to changes in expectations about the size and profitability of the company in future periods [1].

Some researchers have improved the model. This approach is related to the earnings components approach, as other information effectively breaks down reported earnings into components with different value implications. The proxies considered include a measure of the quality of earnings in the current period and observed changes in earnings growth in future periods. To test the validity of the model, additional information is introduced: the coefficient on current period windfall and the coefficient on the term representing the revised forecast for future periods are both predicted to be equal to one [2].

Size and book equity are two easily detectable variables that combine to yield cross-sectional changes in

average stock returns associated with market beta, leverage, book equity and return-to-price ratios [3].

The main demand for accounting research in the capital markets comes from fundamental analysis and tests of valuation and market efficiency. Topics of current interest to researchers include tests of market efficiency, fundamental analysis and valuation in relation to accounting information. Research evidence on these topics may contribute to investment decisions in capital markets, the development of accounting standards, and their application in capital markets [4-6].

2. FIRM DESCRIPTION

2.1 Company Profile

In 2016, CATL sold 6.8 GWh of batteries and was the third-largest battery solutions provider in the world after Panasonic (Sanyo Electric) and BYD. On 11 June 2018, CATL was listed on the Shenzhen Stock Exchange. In the same year, CATL announced that it would build a new battery factory in Arnstadt, Thuringia, Germany. At the same time, BMW announced that it would purchase €4 billion worth of batteries from CATL for its electric BMW MINI and BMW i cars [7].

Many electric vehicle manufacturers are currently using CATL's battery technology. In the international market, CATL works with Tesla, Volkswagen, BMW, Nissan, Peugeot Citroen Group, Hyundai, Honda and others. In China, its customers include BAIC, Geely Automobile, Guangzhou Automobile Group, Yutong

Bus, Zhongtong Bus, Xiamen Golden Dragon, SAIC Group and Beiqi Foton Automobile.

In January 2017, CATL announced a strategic partnership with Vimeo Motors, whose cooperation focuses on engineering support and battery pack supply for electric carriers and hybrid electric vehicles. As part of the partnership, CATL acquired a 22% stake in Vimed Motors.

2.2 Business Scope

In terms of domestic brand customers, the company has maintained long-term strategic cooperation with leading vehicle manufacturers in the industry, including Yutong Group, SAIC Group, BAIC Group, Geely Group, FMC Group, China Motor Group, Dongfeng Group and Changan Group [8-9].

In terms of international brand customers, the company has entered the supply system of international first-class vehicle manufacturers such as BMW and Volkswagen, and is also one of the few domestic suppliers providing power battery solutions for international automobile brands [10]. At the same time, the company has cooperated with emerging vehicle manufacturers such as Azera Motors (including internet car companies and smart car companies) and actively laid out the smart car sector.

2.3 Financial Situation

CATL's business grows at a high rate and revenues increase significantly in 2021.

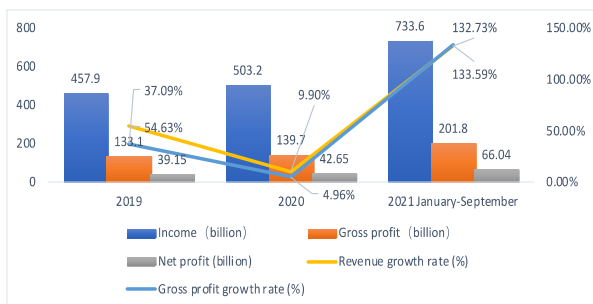


Figure 1. Income from the main business

As shown in the Plot 1 above, High growth in revenue and gross profit. In 2019, the company achieved a revenue of 45.79 billion yuan and a gross profit of 13.31 billion yuan; in 2020, the company achieved a revenue of 50.32 billion yuan, up 9.90% year-on-year, and a gross profit of 13.97 billion yuan, up 4.96% year-on-year. From January to September 2021, the company achieved revenue of RMB 77.36 billion, up 132.73% year-on-year, and gross profit of RMB 20.18 billion, up 133.59% year-on-year.

The significantly lower revenue growth rate in 2020. Due to the global epidemic, the Company achieved a gross profit of RMB13.97 billion in 2020, a modest

increase compared to 2019. 2021 Gross profit achieved RMB20.18 billion from January to September, a significant expansion compared to 2020, and a net profit of RMB6.604 billion in 2021.

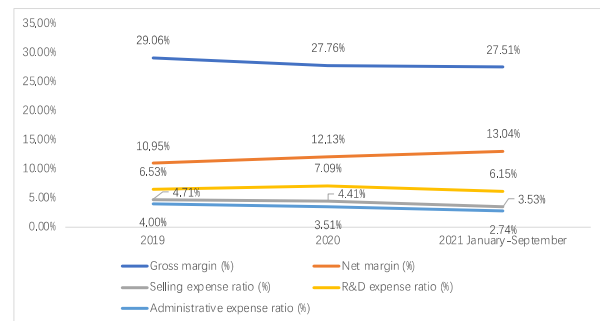


Figure 2. Ratio change

As shown in the Plot 1 above, the gross margin for 2019 is close to 30%. The Company's gross margin is 29.06% in 2019, 27.76% in 2020, and 27.51% in January-September 2021. Over the past three years, gross margins have decreased year on year.

2.4 Stock price analysis

In early February 2022, according to foreign media reports, the US Department of Commerce's Bureau of Industry and Security placed 33 Chinese entities on an "unverified list" because it could not determine how they would use US exports. This was followed by news that CATL was consulting with a US professional body about the possibility of being sanctioned by the US. Rumors of being removed from the GEM weighting index and talks with Tesla also spread afterward. CATL, which was entangled in the rumors, eventually chose to call the police.

Behind the rumors were persistently low share prices. On February 11, 2022, CATL's share price fell below the 500 yuan mark and finally closed at 489.99 yuan per share, with a total market value of 1.14 trillion yuan. On February 14, 2022, CATL share price returned to 500 yuan, and as of midday closing, CATL share price was 509.33 yuan per share, up 3.85%. However, Wu Hui, general manager of the research department of the Ivey Institute of Economic Research and president of the China Battery Industry Research Institute, said in an interview with the China Automotive News that CATL came out to dispel the rumors to stabilize investor sentiment in the short term; but in the long term, the share price is tending to stabilize or continue to fall mainly depending on its follow-up progress, such as whether the United States will introduce relevant policies for CATL. According to relevant data, the global installed capacity of CATL reached 96.7GWh in 2021, with a market share of 32.6%, ranking first in the world, with a growth of 167.13% compared to 36.2GWh global installed capacity in 2020. In the domestic market, CATL has a 52.1% market share with 80.51GWh of installed capacity. As

CATL, which has an absolute leading position in the power battery sector, why did the share price plunge? The main reason for CATL 's share price plummeting is its own inflated valuation, and it is doubtful whether its future performance can support such a high market value. CATL 's share of over 50% of the domestic market is not sustainable, and its market share will increase with the development of "latecomers" and the emergence of new technologies.

This will result in its performance not being able to support its current high market capitalization, hence the fall in share price.

The expense ratio has been reduced. For January-September 2019, 2020 and 2021, the Company's selling expense ratio was 4.71%, 4.41%, and 3.53%, respectively, while the research and development expense ratio was 6.53%, 7.09%, and 6.15%, respectively, and the administrative expense ratio was 4.00%, 3.51%, and 2.74%, respectively.

3. METHOD

3.1 A model about stock returns

To derive the return function, we consider the change in the value of the stock from day t to day $t+1$, which we denote as ΔV_{t+1} . we obtain,

$$\Delta V_{t+1} \approx \Delta B_{t+1} v(q_t, g_t, r_t) + B_t [v_1 \Delta q_{t+1} + C(q_t) \Delta g_{t+1} + v_3 \Delta r_{t+1}], \quad (1)$$

where $v_1 \equiv dv/dq_t$ and $v_3 \equiv dv/dr_t$. Note that $dv/dg_t = C(q_t)$.

Let D_{t+1} be the dividends paid in period $t+1$. The period $t+1$ stock return, denoted R_{t+1} , equals

$$R_{t+1} = \frac{\Delta V_{t+1} + D_{t+1}}{V_t} = v \left[\frac{\Delta B_{t+1}}{V_t} \right] + v_1 \left[\frac{B_t}{V_t} \Delta q_{t+1} \right] + C(q_t) \left[\frac{B_t}{V_t} \Delta g_{t+1} \right] + v_3 \left[\frac{B_t}{V_t} \Delta r_{t+1} \right] + \frac{D_{t+1}}{V_t} \\ + \frac{D_{t+1}}{V_t} = \frac{\Delta B_{t+1}}{B_t} + v_1 \left[\frac{B_t}{V_t} \Delta q_{t+1} \right] + c(q_t) \left[\frac{B_t}{V_t} \Delta g_{t+1} \right] + v_3 \left[\frac{B_t}{V_t} \Delta r_{t+1} \right] + \frac{D_{t+1}}{V_t} \quad (2)$$

Assuming the clean surplus relation, we have $D_{t+1} = X_{t+1} - \Delta B_{t+1}$. We obtain the following function for the period $t+1$ return:

$$R_{t+1} = \left[\frac{X_{t+1}}{V_t} \right] + v_1 \left[\frac{B_t}{V_t} \Delta q_{t+1} \right] + \left[\left(1 - \frac{B_t}{V_t} \right) \frac{\Delta B_{t+1}}{B_t} \right] + C(q_t) \left[\frac{B_t}{V_t} \Delta g_{t+1} \right] + v_3 \left[\frac{B_t}{V_t} \Delta r_{t+1} \right] \quad (3)$$

It shows that the stock return over period $t+1$ is a function of the following five factors: the (X_{t+1}/V_t) represents contemporaneous earnings yield, and the change in profitability is (Δq_{t+1}) , thirdly $(\Delta B_{t+1}/B_t)$ represents the change in equity capital, moreover, the change in growth opportunities is (Δg_{t+1}) , and (Δr_{t+1}) is the change in the discount rate.

4. DEVELOPMENT TRENDS

4.1 "The development experience of " CATL

In 7 years, from 0-13 billion RMB, CATL has risen from a nobody to the world's largest power battery company, quickly becoming a "unicorn" in the new energy sector. The main experience and practices of CATL 's development are as follows:

Firstly, the "Five Golden Rules" of " CATL ". CATL, which created the miracle of the industry, put forward the "five golden rules" of " CATL ": "safety, ultra-high energy density, long life, excellent performance, and clean manufacturing". Long life, excellent performance, and clean manufacturing". At the 2018 China Lithium Industry and Power Battery International Summit Forum themed "Promoting the Coordinated Development of Lithium Industry" on 27 June 2018, Mr. Huang Shilin, Vice Chairman of " CATL ", talked about the development of " CATL " "When talking about the development of CATL, Huang Shilin, vice chairman of CATL, said that the company would focus on the 'five major areas' of power batteries. We will try our best to achieve the world's No.1 technology in these aspects.

Secondly, Binding with downstream vehicle manufacturers. In May 2017, " CATL " and SAIC Group jointly set up 2 new joint ventures, Times SAIC and SAIC Times, the former, 49% owned by SAIC and 51% by CATL, is responsible for the production of electric cores; the latter, 51% owned by SAIC (49% by CATL is responsible for Pack production.

4.2. "CATL" does not stop at electric vehicles

Intelligent development. 2-wheeled electric vehicles and power exchange, electric ships, and energy storage is the series of diversified layouts that " CATL " has started.

Firstly, Intelligent development. 17 April 2019 " CATL and Huawei Technologies Co., Ltd. signed a cooperation agreement, the two sides will carry out in-depth cooperation to achieve complementary advantages and win-win cooperation to meet new opportunities for intellectual development. This means that as the world's leading new energy enterprise " CATL will usher in another round of great development!

Secondly, 2-wheeled electric vehicles and power exchange. On 12 June 2019, CATL together with hello travel and ant gold service, announced the first phase of joint funding of 1 billion yuan to set up a joint venture company, the launch of the positioning of 2-wheeled electric vehicles basic energy network of power exchange business, a comprehensive construction of intelligent travel ecosystem.

Thirdly, Electric ships. At present, more than 90% of the world's ships use diesel engine power systems, which

generate a large amount of oily sewage and harmful gases and particulate matter during navigation and port entry, and serious noise pollution, causing a serious impact on the ecological environment of the waters. Therefore, electric ships with low energy consumption, zero-emission, low noise, and no pollution are an important path to achieving energy saving and emission reduction as well as transformation and upgrading. The electrification of ships is the choice of history.

Fourth, Energy storage. In fact, CATL has been actively applying for national energy storage projects since its inception. In its debut, CATL was awarded the Zhangbei Wind Power Storage and Transmission Demonstration Project. It is the only manufacturer with a "black start" function among many energy storage suppliers who completed the installation and commissioning of the whole project at the earliest, and the project has been highly praised by the users since its operation. Certificate of "2014 Excellent Energy Storage Battery Supplier" and "Most Influential Enterprise in China Energy Storage Industry" for 2 consecutive years in 2015.

5. CONCLUSION

This study provides theoretical on how accounting fundamentals explain cross-sectional changes in stock returns. According to our model, stock returns are associated with changes in rates of return, capital investment, profitability, and growth opportunities, as well as changes in discount rates. Our return model is significantly more effective in explaining cross-sectional stock returns than existing return-based models.

The theoretical and empirical results of this study enhance our understanding of the relationship between stock returns and accounting fundamentals. Our accounting-based model is more effective in explaining cross-sectional price changes than models developed in the finance literature. This suggests that it may be more productive for investors to look for fundamental information about a firm than to use anomalies based on common factors.

Among the cash flow factors, information related to profitability is more important in explaining price changes than information related to size.

The shortcomings of this article, in my opinion, are that it explores and examines only one company and the sample size of the study is small. Moreover, only one industry sector is selected for the study, which is not broad enough. It is not possible to draw a general standard result. And researchers need to be aware that incomplete models can lead to a reduction in the efficiency of the market.

REFERENCES

- [1] P. Chen, & G. Zhang. How Do Accounting Variables Explain Stock Price Movements? Theory and Evidence. MIT Press, 2008. DOI: <https://doi.org/10.1016/j.jacceco.2007.01.001>
- [2] J. Liu, & J. Thomas (2000). Stock Returns and Accounting Earnings. *Journal of Accounting Research*,38(1),71–101. <https://doi.org/10.2307/2672923> 1981, pp. 52–71. DOI: <https://doi.org/10.1007/BFb0025774>
- [3] E.F. FAMA and K.R. FRENCH (1992), The Cross-Section of Expected Stock Returns. *The Journal of Finance*, 47: 427-465. <https://doi.org/10.1111/j.1540-6261.1992.tb04398.x>
- [4] S.P Kothari. Capital markets research in accounting. *Journal of Accounting and Economics*. Volume 31, Issues 1–3,2001. [https://doi.org/10.1016/S0165-4101\(01\)00030-1](https://doi.org/10.1016/S0165-4101(01)00030-1)
- [5] M. Burkart and T. Ellingsen, "In-Kind Finance: A Theory of Trade Credit," *American Economic Review*, vol. 94, no. 3, pp. 569–590, 2004, doi: 10.1257/0002828041464579.
- [6] W. N. Goetzmann, "The single family home in the investment portfolio," *The Journal of Real Estate Finance and Economics*, vol. 6, no. 3, pp. 201–222, 1993, doi: 10.1007/BF01096958.
- [7] R. M. Townsend, "Financial Structure and Economic Activity," *The American Economic Review*, vol. 73, no. 5, pp. 895–911, 1983.
- [8] W. Li, Y. Cheng, and Q. Fang, "Forecast on silver futures linked with structural breaks and day-of-the-week effect," *The North American Journal of Economics and Finance*, vol. 53, p. 101192, 2020, doi: 10.1016/j.najef.2020.101192.
- [9] K. Kupferschmidt and J. Cohen, "Can China's COVID-19 strategy work elsewhere?," *Science*, vol. 367, no. 6482, p. 1061, 2020, doi: 10.1126/science.367.6482.1061.
- [10] R. Mora Cortez and W. J. Johnston, "The Coronavirus crisis in B2B settings: Crisis uniqueness and managerial implications based on social exchange theory," *Industrial Marketing Management*, vol. 88, pp. 125–135, 2020, doi: 10.1016/j.indmarman.2020.05.004.

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