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Correlation Analysis of Stock Price Movements between Large State-owned Listed Enterprises and Small-Medium Size Listed Companies : Based on Data Analysis of Share Listed Companies Since 2020

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ABSTRACT

To explore the complex relationship between the stock price movements of large state-owned listed enterprises and small and medium-sized listed companies, this study conducts a theoretical review and correlation analysis using data from January 1, 2020, to June 30, 2024, as a sample. The analysis reveals that, while the stock prices of both groups generally exhibited a high correlation in the past, this correlation has weakened recently, with signs of even turning negative. The research finds that structural changes within China's A-share market have emerged, with the stock price performance of large state-owned enterprises beginning to diverge from that of small and medium-sized companies. Based on these findings, the following recommendations are made for value investors: Pay attention to the medium- to long-term investment value of large state-owned enterprises and increase the investment proportion in large state-owned enterprises or related stock index funds; View market fluctuations rationally and avoid blindly following the trend.

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INTRODUCTION

In the first half of 2024, China's GDP totaled 61.68 trillion yuan, with a year-on-year growth rate of 5% at constant prices, maintaining a steady improvement in the overall direction. Generally speaking, state-owned enterprises (SOEs) are the economic pillars of China, and only when the economic operations of SOEs are stable and improving can the overall economic environment of China maintain stability and progress. For large SOEs and small and medium-sized enterprises (SMEs) listed on the A-share market recently, the fluctuations in their stock prices have perfectly demonstrated the principle of equal risk and return in the market to many investors. Normally, the rise and fall of the stock market are influenced by supply and demand relationships. When there is little incremental capital, it often becomes a game between the existing capital in the market. Due to their large market capitalization, short-term fluctuations are unlikely to cause significant changes in the stock prices of large listed SOEs. Even if there are fluctuations, their stock prices will quickly return to their intrinsic value. Only long-term performance improvements can drive stock prices up and reflect in the medium- to long-term stock price trends, meaning that investors holding stocks of large listed SOEs generally experience relatively stable profits and losses. As for SMEs, investors holding their stocks often experience larger profit and loss fluctuations. This is because SMEs have a smaller market capitalization in the stock market, making their stock prices susceptible to the influence of small amounts of capital, resulting in sharp rises or falls in the short term. While investors enjoy excess returns, they also bear greater risks. By analyzing large listed SOEs and SMEs as comparative variables, this study aims to provide an accurate understanding of the current state and trends of the A-share market and offer insights for investors. That is, to conduct a correlation analysis of the stock price movements of these two types of enterprises.

LITERATURE REVIEW

After enduring the challenges posed by the COVID-19 pandemic, China's economic environment remains stable and positive (Yu Shunkun et al., 2024). Large state-owned enterprises (SOEs) play a pivotal role in economic and social operations. From a macro perspective, China's current and future economic system is based on public ownership as the mainstay, with diverse forms of ownership developing together. Under this premise, SOEs are the main theme of China's economic operations, and this is even more evident in the securities market. In the early 1990s, when China's securities market was first established, large SOEs and their holding companies constituted the main body of the A-share market. Over the past three decades of vigorous development, diverse forms of ownership have also become a force that cannot be ignored. With the combined efforts of multiple parties, the current A-share market has emerged. Currently, China is in the context of SOE reform. In brief, the Party Central Committee has decided to implement a strategy to make SOEs bigger and stronger. Advancing SOE reform not only enhances the competitiveness of SOEs but also invigorates them, facilitates the appreciation and preservation of state-owned assets, leverages the multiplier effect to amplify the function of state capital, and optimizes the allocation of socialist market resources (Liu Fang et al., 2024). According to data compiled from the official website of the State-owned Assets Supervision and Administration Commission of the State Council, the total operating revenue of state-owned and state-controlled enterprises, measured in trillions of yuan, was 62.6, 63.3, 75.6, 82.6, and 85.7 trillion yuan from 2019 to 2023, with year-on-year growth rates of 6.9%, 2.1%, 18.5%, 8.3%, 3.6%, and 3.1% (note: the last growth rate is for the period from January to May 2023 compared to the same period in the previous year, but for consistency, it is presented here as part of the 2023 data, though it should be noted that it is not a full-year growth rate). From January to May 2024, the total operating revenue was 32.9 trillion yuan, with a year-on-year growth rate of 3.1%. Their total profit, also measured in trillions of yuan, was 3.6, 3.4, 4.5, 4.3, 4.6, and 1.7 trillion yuan from 2019 to 2023 (note: the last figure is likely a partial-year profit for 2023), with year-on-year growth rates of 4.7%, -4.5%, 30.1%, 5.1%, 7.4%, and 2.3% (similarly, the last growth rate is for the period from January to May 2024). From January to May 2024, the total profit was 1.7 trillion yuan, with a year-on-year growth rate of 2.3%. Combining the actual revenue data of SOEs, it is evident that the overall operating conditions of SOEs are steadily improving. Despite a real positive growth in total operating revenue during the COVID-19 pandemic year of 2020, total profit declined year-on-year but recovered in 2021. Overall, this aligns with the positive growth of China's gross domestic product over the years.

External Factors Influencing Stock Price Fluctuations

The macroeconomic environment affects investors' expectations for the future. When economic growth is robust, investor confidence is strong, positively impacting the stock prices of listed companies. Conversely, during economic slowdowns or recessions, investors may revise down their earnings expectations for the future, leading to stock price declines. Changes in interest rates influence the cost of capital. Generally, when interest rates fall, the cost of capital decreases, making investors more inclined

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to invest in the stock market, thereby pushing stock prices up. Conversely, when interest rates rise, the cost of capital increases, potentially leading investors to reduce their investments in the stock market, causing stock prices to fall. Policy changes in the capital market can also cause fluctuations in stock prices. For example, on April 12, 2024, to promote high-quality development of the capital market (Liu Hongzhen, 2024), the State Council issued the "Several Opinions on Strengthening Supervision, Preventing Risks, and Promoting High-Quality Development of the Capital Market," marking the third "Nine National Policies" following those in January 2004 and May 2014. Due to the "one yuan face value delisting" rule, introduced just over two months prior, the low-priced stock sector (BK1053) index compiled by Eastmoney.com fell from 771.05 on April 12, 2024, to 560.8 on June 30, 2024, a decline of 27.7%. Of course, there are also opposing views that low-priced stocks are more favored (Lu Rong et al., 2024). Information asymmetry leading to overheated speculation is also a factor influencing stock price fluctuations (Cong Linjie et al., 2023). Stock trading often involves investors betting on the future operating performance of listed companies. Since individual small- and medium-sized listed companies have smaller market values, once influenced by certain policies or market hotspots, their stock prices may surge due to short-term speculative funds before these favorable factors materialize, resulting in significant changes in market value over the short term. However, for large state-owned enterprises with larger market values, the likelihood of the above situation occurring is very small, which can easily lead to a divergence in stock prices between large state-owned enterprises and small- and medium-sized listed companies.

Internal Factors Influencing Stock Price Fluctuations

In the absence of significant changes in external factors, stock price fluctuations are more closely related to a company's operating performance. Financial indicators are key ways to reflect performance, and the price-to-earnings ratio (P/E ratio) and price-to-book ratio (P/B ratio) derived from these indicators are commonly used as important metrics for valuation. They are widely used because they reflect the relationship between a listed company's current stock price and its profitability and net assets, respectively. The CSI 200 Index of State-owned Enterprises (H00956.CSI) compiled by Eastmoney.com includes 200 representative large state-owned enterprises listed on the Shanghai and Shenzhen stock exchanges. As of June 30, 2024, the average P/E ratio of the constituents of the CSI 200 Index of State-owned Enterprises was 10.6, and the average P/B ratio was 1.1. These figures basically reflect the overall valuation level of state-owned enterprises in the A-share market. They are lower than the average P/E ratios of 13.2 and 20.8, and the average P/B ratios of 1.2 and 1.9 for the Shanghai Composite Index and Shenzhen Component Index, respectively, over the same period. Meanwhile, the SME Composite Index (399101.SZ) compiled by Eastmoney.com includes nearly 1,000 small and medium-sized non-state-owned enterprises listed on the Shanghai and Shenzhen stock exchanges, with most of the constituent companies having relatively small market values. As of June 30, 2024, its average P/E ratio was 30.2, and its average P/B ratio was 1.9, significantly higher than the relevant indicators of the CSI 200 Index of State-owned Enterprises, Shanghai Composite Index, and Shenzhen Component Index over the same period. The repurchase rate is also a factor contributing to stock price fluctuations (Zhang Qianyu et al., 2023). Data from the past two years, from 2022 to 2023, shows that private enterprises have a higher willingness to repurchase shares than state-owned listed companies over the same period (Ma Chunyang, 2024). Stock dividends also affect stock prices. In recent years, listed companies have shown an increasing awareness of dividends, with the amount of dividends growing and stability improving. In this regard, large state-owned enterprises listed on the stock market far exceed small and medium-sized listed companies (Yang Yu, 2023).

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(II) Analysis of Mutual Factors Influencing the Prices of Large Listed State-owned Enterprises and Small and Medium-sized Listed Companies.

Transmission of Market Sentiment

Large listed state-owned enterprises and small and medium-sized listed companies coexist in the A-share market, and there will be more or less interconnected effects between them (Chen Jian et al., 2023). For example, during a bull market, with the active promotion of multiple parties, the securities market experiences long-awaited vitality. Many dormant accounts are activated, and the influx of off-market funds, like powerful warm currents, injects enormous liquidity into the market. This massive influx of funds acts as a catalyst, stimulating an overall upward trend in the market and driving various sectors and individual stocks to rise competitively. Both large listed state-owned enterprises and small and medium-sized listed companies will rise together. However, when the market enters a bear market, the situation is completely different. Investor confidence is low, and a prevalent pessimistic attitude emerges. Under the collective pessimistic expectations of market participants, funds begin to withdraw, creating selling pressure. Ultimately, insufficient liquidity leads the market into a dilemma of collective decline.

Influence of Fund Flows

The real situation in the A-share market for most of the time is characterized by neither a bull market nor a bear market (Sui Xinyu et al., 2020). Instead, it is often a game played among existing funds for the majority of the time. During the stage of market capital stock games, large listed state-owned enterprises demonstrate significant stability due to their huge market capitalization. This scale advantage effectively buffers the impact of short-term market fluctuations, making it difficult for their share prices to undergo drastic fluctuations. Even if there are occasional deviations, they can quickly self-correct and return to their intrinsic value range. In contrast, the stock performance of small and medium-sized listed companies appears more sensitive and volatile. Due to their relatively weak market capitalization base in the stock market, they are more susceptible to significant impacts from limited capital flows, causing their share prices to potentially experience sharp increases or decreases in the short term. This, in turn, exposes investors holding such stocks to greater uncertainty in profits and losses. In general, as China's stock market continues to develop and improve, large state-owned enterprises and small and medium-sized listed companies, as important components of the market, reflect not only their respective operating conditions through their share price trends but are also influenced by multiple factors such as the macroeconomic situation, industry policies, and market sentiment. Therefore, studying the correlation between the share price trends of the two is of great significance for understanding market structure and optimizing investment strategies.

RESEARCH METHOD

The research spans from January 1, 2020, to June 30, 2024, dividing listed companies in the A-share market into two groups: large listed state-owned enterprises (LSEs) and small and medium-sized listed companies (SMEs). The aim is to study the differentiation within the stock market. Particularly, following the implementation of Category B management for COVID-19 on January 8, 2023, this research aims to illustrate changes compared to the pre-implementation period and predict future trends. A brief overview of each period is provided below:

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Before the COVID-19 outbreak, large listed state-owned enterprises, due to their pivotal role in the national economy, had deep industry experience, strong anti-risk capabilities, and robust business strategies, typically enjoying high market recognition and stability. In contrast, small and medium-sized listed companies exhibited varying performances based on industry characteristics, business concentration, and operational capabilities.

The COVID-19 pandemic caused tremendous shocks to global and A-share markets. For various reasons, January 1, 2020, is set as the starting point for studying stock market differentiation. From the initial extreme panic in market sentiment to the effective control of the virus, the A-share market overall experienced a trend of first decline and then rise. During this period, differentiation within the market emerged. On the one hand, large listed state-owned enterprises, leveraging their core positions in the industrial chain, maintained relatively stable performance growth. On the other hand, small and medium-sized listed companies faced mixed performances due to economic downturn-related operational pressures, financing difficulties, and other issues.

On January 8, 2023, China implemented "Category B management" for COVID-19, marking a new stage in prevention and control. However, this change did not immediately lead to a comprehensive rebound in the stock market; instead, differentiation within the market intensified. Large listed state-owned enterprises played a stabilizing role in the national economy, especially during the economic recovery process, where their performance was relatively robust. Meanwhile, with policies deepening reforms of state-owned enterprises, some state-owned enterprises saw improvements in governance structures, operational efficiency, and other aspects, further enhancing market confidence. For small and medium-sized listed companies, while some demonstrated strong growth potential, they faced significant operational pressures and financing challenges as a whole. Issues accumulated during the economic downturn have not been fully resolved, coupled with intensifying market competition, policy adjustments, and other factors, leading to further differentiation in their performance.

Research Hypothesis

We hypothesize that there exists a positive or negative correlation between the stock price movements of large listed state-owned enterprises (LSEs) and small and medium-sized listed companies (SMEs), and this correlation may vary across different periods. To quantify this correlation specifically, the research is conducted according to the following approach: the two variables are divided into two periods: from January 1, 2020, to January 7, 2023, and from January 8, 2023, to June 30, 2024. The correlation in each period is analyzed separately, and the results are then compared and analyzed to draw final research conclusions.

Sample Selection and Data Collection and Processing

Data selection and collection are the first steps in empirical analysis. Representative sector indices from the Shanghai and Shenzhen stock exchanges are selected as research samples. The following data are obtained from Eastmoney.com, where the stock prices of large listed state-owned enterprises are represented by the China State-owned Enterprises 200 Index (hereinafter referred to as the "SOE 200 Index"). This index consists of 200 state-owned enterprises with market capitalizations of 20 billion or more. Its advantage is that the sample covers both the Shanghai and Shenzhen stock exchanges, aligning with practical application scenarios and fitting the ideal sample data for large listed state-owned enterprises, which are typically large-cap stocks whose short-term fluctuations are unlikely to significantly alter their market capitalizations. The sample data for small and medium-sized listed companies is represented by the Small and Medium Enterprise Composite Index (hereinafter referred to as the "SME

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Composite Index"), which consists of nearly 1,000 non-state-owned small and medium-sized listed companies. Most of these companies have relatively small market capitalizations, making them ideal sample data that are susceptible to significant changes in market capitalization due to short-term fluctuations. The overall market indices are represented by the Shanghai Composite Index and the Shenzhen Component Index. The sample data for large listed state-owned enterprises, small and medium-sized listed companies, and the overall market indices all use daily K-line closing prices. Their advantage is that they truly reflect market sentiment and trends. For medium to long-term investors, the daily K-line closing price is an important reference indicator for judging future medium to long-term market conditions and the current situation. Therefore, 1,087 sample data points are extracted for each index from January 1, 2020, to June 30, 2024. The sample data obtained from the four indices are all logarithmically processed, with the overall market index being the logarithm of the sum of the Shanghai Composite Index and the Shenzhen Component Index. Logarithmic processing not only reduces the absolute values of the data but also reduces data fluctuations. Moreover, the logarithmically processed sample data do not alter their original properties or the correlation between the data within the sample.

RESULT AND DISCUSSION

Correlation Analysis

The correlation coefficient is obtained by dividing the covariance of two variables by the product of their standard deviations. According to the research design, the two variables of large listed state-owned enterprises (LSEs) and small and medium-sized listed companies (SMEs) are studied separately for the two periods from January 1, 2020, to January 7, 2023, and from January 8, 2023, to June 30, 2024. The sample variables for the two periods are referred to as "LSEs before the implementation of Category B, Class B management" and "SMEs before the implementation of Category B, Class B management," respectively, as well as "LSEs" and "SMEs" for clarity. First, the sample data from January 1, 2020, to January 7, 2023, are analyzed, and the correlation analysis results are as follows:

Table 2.1 Correlation Analysis Results between LSEs, SMEs, and the Overall Market Index Before the Implementation of Category B, Class B Management

	LSEs Before Category B, Class B Management	SMEs Before Category B, Class B Management	Overall Market Index
LSEs Before Category B, Class B Management	1.000	0.902	0.915
SMEs Before Category B, Class B Management	0.902	1.000	0.887
Overall Market Index	0.915	0.887	1.000

Data Source: EViews10

From Table 2.1, it can be observed that there is a high positive correlation between LSEs before the implementation of Category B, Class B management and the overall market index, reaching 91.5%. This indicates that when the overall market index rises, the overall performance of LSEs tends to rise as well, and vice versa. The positive correlation between SMEs before the implementation of Category B, Class B management and the overall market index is also high, reaching 88.7%. Although this figure is slightly lower than the correlation between LSEs and the overall market index, it still shows that the stock price movements of SMEs are highly synchronized with the overall market index. The positive correlation between the sample data of LSEs and SMEs before the implementation of Category B, Class B management reaches 90.2%, indicating that their market performances tend to synchronize.

Next, the sample data from January 8, 2023, to June 30, 2024, are analyzed, and the analysis results are as follows:

Table 2.2 Correlation Analysis Results between Large Listed State-owned Enterprises, Small and Medium-sized Listed Companies, and the Overall Market Index

	Large Listed State-owned Enterprises	Small and Medium-sized Listed Companies	Overall Market Index
Large Listed State-owned Enterprises	1.000	0.459	0.635
Small and Medium-sized Listed Companies	0.459	1.000	0.966
Overall Market Index	0.635	0.966	1.000

Data Source: EViews10

From the data in Table 2.2, it can be observed that there is a moderate positive correlation between large listed state-owned enterprises and the overall market index, with a correlation coefficient of 63.5%. This correlation is not very strong, indicating that although there is a relationship between the two, the performance of large listed state-owned enterprises may also be influenced by other factors. Small and medium-sized listed companies have a very high positive correlation with the overall market index, reaching 96.6%, with almost synchronized movements in price. The correlation between large listed state-owned enterprises and small and medium-sized listed companies is 45.9%, indicating a certain degree of positive correlation, but relatively weak.

(III) Analysis Results

During the period from January 1, 2020, to January 7, 2023, before the implementation of Category B, Class B management, large listed state-owned enterprises and small and medium-sized listed companies exhibited a high positive correlation in the fluctuations of A-share prices, with a correlation coefficient of 90.2%. However, after the implementation of Category B, Class B management, from January 8, 2023, to June 30, 2024, the two showed only a relatively weak positive correlation, with a correlation coefficient of 45.9%. Correlation analysis summarizes past trends, and this result indicates that the stock price movements of these two groups diverged to some extent after the implementation of Category B, Class B management compared to before.

CONCLUSIONS

Through theoretical analysis and empirical research, it is found that in the A-share market, before the implementation of Category B, Class B management, the stock price movements of large listed state-owned enterprises and small and medium-sized listed companies generally exhibited a high correlation. However, after the implementation of Category B, Class B management, an analysis of market transaction data revealed that this correlation significantly weakened, and even showed a negative correlation in some periods. This indicates that structural changes within the A-share market in China have begun to emerge, with the overall stock price performance of large listed state-owned enterprises and small and medium-sized listed companies starting to diverge.

Research Recommendations

Based on the above research conclusions, the following three recommendations are made for value investors. Firstly, focus on the investment value of large state-owned enterprises. Under the socialist valuation system with Chinese characteristics, large listed state-owned enterprises may have medium- to long-term investment value due to their stable operations and policy support. Secondly, investors can consider increasing their investment proportion in large state-owned enterprises or related stock index funds. To flexibly respond to market differentiation, investors should adjust their investment strategies flexibly in the face of polarization in the A-share market. They should pay attention to the stable growth of state-owned enterprise sectors such as those with "China" in their names, while also keeping an eye on high-quality targets among small and medium-sized listed companies. Lastly, investors should rationally view market fluctuations. Short-term fluctuations in the stock market are difficult to predict, so investors should adhere to the concept of value investing, avoid blindly following trends or speculative behavior, and focus on long-term returns and risk control.

(III) Research Outlook

Future research can be refined to industry classifications, analyzing the differences in stock price movements between large state-owned enterprises and small and medium-sized listed companies in different industry contexts to reveal more specific market laws. More control variables can be introduced, considering the impact of multiple factors such as macroeconomics, policy environment, and market sentiment on stock prices, to build a comprehensive analysis model. Various analytical methods can be adopted to deeply explore the internal connections and dynamic evolution laws of stock price movements, providing investors with more precise investment decision support.

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