The Impact of the COVID-19 Pandemic on China's Stock Market
-- Based on Research on the Chinese Medicine Industry

Chenghao Cui1,†, Shaoshen Wu2,† and Kaifeng Zhou3,†,*

1Jurong Country Garden School, Jurong, Jiangsu, 212400 China
2Malvern College Qingdao, Qingdao, Shandong, 266000, China
3High School Attached to Northeast Normal University, Changchun, Jilin, 130000, China

* Corresponding Author Email: jiaxiuhua@kfjt64.wecom.work
† These authors contributed equally.

Abstract. The outbreak of the new crown epidemic has had an impact on many industries, in order to study the impact of the severity of the new crown epidemic on the Chinese medicine industry, 3 related stocks are taken as a sample: 00538 (Yunnan Baiyao); 60085 (Tongrentang) and 600129 (Taiji Group), using the OLS regression model and calculating excess yields to process and analyze the data, taking the number of daily individual stock trading shares and the daily individual stock trading amount as the interpreted variables, and citing the paper and data content to carry out the impact of the new crown epidemic on China's stock market, and concluded that the impact of the new crown epidemic on the Chinese medicine industry is different in time period, and the Chinese medicine industry has not been affected by the impact of the epidemic and has fallen, but has a certain rise. Thus, it can be found that the new crown epidemic has promoted the development of the Chinese medicine industry.

Keywords: COVID-19; Chinese medicine industry; Event research method.

1. Introduction

The outbreak of the new crown epidemic has brought great impact on China's social economy, recently defined by the World Health Organization as the fifth "concern variant strain" of the Omichron strain, in March 2022 in all parts of our country has spread to 21 provinces and 71 cities, to June a total of confirmed 111218 people, despite the serious epidemic provinces to carry out lockdown and isolation of risk personnel and other effective measures, but also on the daily life of residents and business production has brought a lot of impact, at the same time, The stock market is a barometer of the economy, this kind of sudden event will have an impact on the stock market at the first time, these data are important because they can clearly show the impact of COVID-19 on the stock market and can be reflected in the data and models.

Therefore, this paper takes the outbreak of the new epidemic of Omichron strain in 2022 as the main research object and explores its impact on the short-term volatility and excess yield of China's new Chinese medicine industry. Epidemics began to occur across the country on March 10, 2022, until they were basically controlled in June. Therefore, the trading days from March 10, 2022, to June 10, 2022, are used as a time series to analyze the impact of this period on the profitability of the Chinese medicine industry. To provide an empirical basis for the potential impact of the new crown epidemic on the Chinese medicine industry, the data is processed and analyzed by using the industry index data variables of the Yangtze River Chinese Medicine Industry Index in the past month from 2020 and March 10, 2022.

This study is organized as follows. Section 2 reviews the literature, Section 3 shows the method, Section 4 is the data the results and Section concludes the paper.
2. Review of the Literature

The New Crown epidemic, as a sudden global event, had a significant impact on all sectors of the Chinese stock market, which showed signs of a turnaround in 2021 but still experienced a small decline in 2020, with most sectors suffering a negative shock.

Zhang used statistical analysis to conclude that the food and beverage industry was affected by the epidemic and saw a significant drop in revenue growth [1], while Du used an event study to conclude that stock returns in the tourism sector were very sensitive to news of the New Crown epidemic, with a significant negative cumulative abnormal return [2]. Chen conducted an analysis using panel data regressions to conclude that stock prices of listed companies in the transport, retail and real estate sectors fell severely [3]. Whereas there was also a positive impact or even no impact on individual sectors, Duan used event analysis to empirically analyse the Shenwan Pharmaceutical Industry Index, and the New Crown Pneumonia epidemic had a significant positive impact on pharmaceutical industry returns, causing a rise in stock prices [4]. Ji used event analysis to conclude that the manufacturing sector was not significantly affected by the epidemic along with weakened consumption power and effective state control over the epidemic [5].

The above literature fully illustrates the long-term impact of the New Crown epidemic as a sudden event on the stock market, while this study takes the outbreak of the Omicron strain in early March 2022 and the Yangtze River Chinese Medicine Index for nearly one month from the early stage of the New Crown outbreak in March 2020 as the research object. A comparison is made to explore the impact of the New Crown pneumonia outbreak on the earnings of listed companies in China's Chinese medicine industry using the event study method.

3. Research Methodology

Event-Study Analysis (ESA), which dates back to the 1930s, has been borrowed and expanded since then [6-10]. The event analysis method can be used to analyze the impact of an unexpected event on a target variable by defining a time window in which the target variable is affected by the event, centered on the point in time when the event occurs. On this basis, the impact of the event on the trend of the target variable is examined and the degree of significance. This method is similar to DID but has the advantage that the dynamic impact path of the event on the target variable can be analyzed by continuous observation during the selected window period. A comparison is made between the sample data in 2020 and 2022 to quantify the impact of the new crown pneumonia epidemic on the stock price return of China's Chinese medicine industry, which is mainly reflected by the change in excess return before and after the event. The method requires the selection of a specific event according to the purpose of the study, the definition of the time period when the event has an impact, i.e., the "event window", and the calculation of the magnitude of excess returns during the event window to measure the impact of the event on the sample stock prices.

4. Data, Method and Results

All data taken from wind database. Data variables in this paper, the Yangtze River Chinese Medicine Index from February 07 to April 15, 2020, and February 8 to April 18, 2022, is selected as sample data, and the daily yield is calculated using the historical data of the sample index.

The event analysis method used in this paper expresses the excess return as the difference of returns, while the market model is chosen as the econometric model with the time horizon of (2020/2/7-2020/4/13), and the CKCM indexes from February 07, 2020 to April 15, 2020 and February 8, 2022 to April 18, 2022 are used as the sample data to calculate the model as follows: \( R_{it} = \alpha_i + \beta_i R_{im} + \varepsilon_{it} \) where \( \alpha_i, \beta_i \) are the regression coefficients, \( \varepsilon_{it} \) is the random error option. The Yangtze River Chinese medicine index is selected as the sample data to calculate the expected return: \( A\alpha_{it} = \alpha_i - \beta_i R_{im} \)
where $\alpha_i$ and $\beta_i$ are ordinary least squares (OLS) estimates. Regression based on the relevant data yields the Yangtze River Chinese medicine industry index expected return $\ AR_{it} = \alpha_i - \beta_iR_{im}$

<table>
<thead>
<tr>
<th>Table 1. Mean value and standard deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>2020 Before COVID-19</td>
</tr>
<tr>
<td>2020 After COVID-19</td>
</tr>
<tr>
<td>2022 Before COVID-19</td>
</tr>
<tr>
<td>2022 After COVID-19</td>
</tr>
</tbody>
</table>

According to the Table 1, the mean value before the epidemic in 2020 was 0.004370, compared to -0.002694 after the epidemic in 2020, the New Crown epidemic had a negative impact on the Chinese medicine industry index, causing the market value of each stock to fall. The impact on the industry was minor and fluctuations were basically the same without much impact, in addition to this, the maximum value before the 2020 epidemic was about 0.034 higher than after the epidemic by about 0.001, indicating that the first epidemic did have a negative impact on the TCM industry and other industries, and the minimum value illustrates this even more, with -0.019713 before the epidemic and -0.025694 after the epidemic making The negative impact is reinforced by the fact that the TCM sector index fell to the bottom.

The mean value of returns before and after the 2022 epidemic rose slightly from 0.000634 to 0.000820, with the TCM industry index trending upwards and the market value of each stock rising. the standard deviation of the TCM index before and after the 2022 epidemic was essentially unchanged, falling by 0.000769. this can also be illustrated by the change in the maximum value before and after the epidemic, which fell from 0.0553 to 0.0495 and the minimum value decreases from -0.0353 to -0.0362. the maximum value decreases by 0.006 and the minimum value decreases by 0.0008, showing an overall trend of contraction: the dispersion of the stock market before and after the 2022 epidemic is unchanged, while the returns increase, indicating that the TCM stock market is not negatively impacted by the new epidemic shock, but rather receives a better market return.

From the Table 1, the average value of 0.004370 before the epidemic in 2020 and 0.000634 before the epidemic in 2022 shows that the impact of the new crown epidemic on the Chinese medicine industry index is more negative in 2022 than in 2020, while the market value of each stock decreases, while at the same time, the impact of the new crown epidemic on the Chinese medicine industry index is much smaller and tends to rebound at the end of 2020 compared to the end of 2022. The impact of the new crown epidemic on the end of 2022 is much smaller and tends to rebound. In terms of standard deviation, the difference between before and after the epidemic in 2020 and before and after the epidemic in 2022 is very large, for example (0.014971 before the epidemic in 2020 and 0.021791 before the epidemic in 2022, a difference of 0.00682) from the data, we can see that the dispersion of data before and after 2022 is very strong, so we can judge that the fluctuation in 2022 is stronger, while in 2020 and before the epidemic in 2022, the market capitalization of the new crown has decreased. (0.021791 before the epidemic and 0.00682 after the epidemic in 2020 and 2022). It can be seen that the fluctuation of the maximum value before and after the epidemic in 2020 is much larger than that in 2022, which shows that the first epidemic did cause a strong negative impact on the Chinese medicine industry and other industries, but the impact was moderated in 2022.

5. Conclusion

The impact of the new crown epidemic on the Chinese medicine industry is different in the time period, as other industries, the Chinese medicine industry received a negative impact in the early stage of the new crown epidemic in 2020, and the new crown epidemic yield in the 2022 stage has risen, indicating that the Chinese medicine stock market has not been negatively impacted under the new round of epidemic impact, but has received better returns in the epidemic. Therefore, through model
comparison, the Chinese medicine industry has adapted to the impact of the outbreak of the new crown epidemic and is gradually promoting the development of the Chinese medicine industry.

References