# An Empirical Analysis of the Annual Report Effect of High Market Capitalization Companies in China

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ABSTRACT

In this paper, we study the abnormal stock price returns of the top 10 stocks in the Chinese stock market in terms of total market capitalization before and after the release of their annual reports in the past 10 years, using the event study method implemented by the Event Study package of the Alpha Library under Python, using a market model to estimate normal returns. The results find that and most of the events have insider phenomenon.

## 1. Introduction

In the field of asset pricing, the occurrence of news events, especially about a company's business situation, and what kind of impact it has on the stock price has been a hot issue. With the rapid development of the Internet, investors are able to capture and process information accurately and without any framing bias amidst the flood of information. Extracting valid information from historical annual report events helps investors weigh the impact of news events on stock prices, form comprehensive judgments about the stock market, and make effective decisions. It also provides listed companies with a new perspective to measure the degree of impact of annual report events on stock prices, which in turn can effectively avoid losses caused by herding effects triggered by overheated market sentiment. In the context of accelerated dissemination of events and complex communication paths, the public opinion environment also tends to be complex. Listed companies are facing unprecedented challenges in terms of facing the public, investors, and other aspects such as brand image and reputation.

## 2. Annual Report Effect

The so-called "annual report effect" is generally found in the mass media and usually refers to the phenomenon that stock prices follow the accounting surplus information contained in annual reports of listed companies (hereinafter referred to as "annual reports") as they are released [1]. Traditional financial theory suggests that irrational investors cannot cause abnormal rates of return because irrational behavior is a stochastic

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behavior. If there is a correlation between the irrational behavior of irrational investors, it can cause a bias in the price system. This is when rational traders can drive prices back to normal levels through arbitrage trading [2]. Behavioral finance understands continuous prices in terms of overreaction. After a long period of price momentum, investors tend to classify stocks with good past performance as winners and stocks with poor past performance as losers, and thus become overly optimistic (pessimistic) about the future performance of good news (bad news) stocks after a series of good (bad) news of increasing (decreasing) surpluses, leading to abnormal stock prices with abnormal returns [3].

## 3. Empirical Analysis

### 3.1 Identification of Research Subjects

Companies whose total stock market capitalization accounts for 1% or more of the total market capitalization of the entire market are considered to be high market capitalization companies. According to the data of Shanghai Stock Exchange, the top ten listed companies in terms of total market value on the main board as of May 22, 2021 are shown in Table 1 below, and the percentage of total market value of the main board accounted for by the ten companies totals 23.83%. The variable names are recorded in order as MT, GSYH, ZSYH, NYYH, ZGSY, ZGPA, ZGRS, ZGYH, ZGZM, and HTWY.

Due to incomplete domestic factor data, the estimated normal return model uses market model with the window period set from 5 days before to 10 days after the annual report announcement date. The daily return data of ten stocks from January 1, 2000 to March 10, 2021 and the corresponding daily return data of the SSE Composite Index (00001) are downloaded from the Guotaian database, and the variable name of the SSE Composite Index is recorded as SZ, which is organized and saved as a CSV file.

**Table 1.** Main Board Total Market Capitalization Ranking

| Rank | Stock | TMC(million yuan) | Percentage of TMC |
|------|-------|-------------------|-------------------|
| 1 | 600519 | 256528152.74 | 5.99% |
| 2 | 601398 | 139389513.88 | 3.25% |
| 3 | 600036 | 111623218.31 | 2.61% |
| 4 | 601288 | 103435124.29 | 2.42% |
| 5 | 601857 | 75941454.50 | 1.77% |
| 6 | 601318 | 75882814.81 | 1.77% |
| 7 | 601628 | 71653766.73 | 1.67% |
| 8 | 601988 | 69131088.87 | 1.61% |
| 9 | 601888 | 62088722.30 | 1.45% |
| 10 | 603288 | 55433289.82 | 1.29% |

### 3.2 Determination of the Date of Occurrence of the Event

Due to the differences in the timing of the listing of the ten companies and the release of their annual reports, the event that Haitian Flavor released its annual report on March 25, 2014 was excluded under the condition that the length of the common minimum estimation period (observed as 170 days) must be met. Specifically, because the time between Haitian Flavor's first IPO and the first release of its annual report is too short to set an estimation period. By 2021, Haitian Flavor has released six annual reports, plus the remaining nine companies' annual reports, for a total of 96 events. After sorting out and saving as CSV file, the corresponding title lines should be: security_ticker, market_ticker, event_date.

### 3.3 Implementation of the Calculation

In this paper, we use the Event Study package in the alpha library under Python as a calculation tool, which is divided into two classes Signle and Multiple according to the number of events studied. The class Multiple is used to study whether several stocks have abnormal returns during the window period when a particular event is repeated several times for these stocks. Also, libraries such as Numpy, Matplotlib, and excel_Exporter are introduced in this paper for data processing, plotting images, and outputting results. Data are imported using import returns(), results are output using methods plot(), results(). plot outputs AR, CAR and confidence level with default 90%, image format is matplotlib. Figure, results() outputs AR, CAR, T-value and P-value, and passes the corresponding significant level at The CAR of the test is marked with a star, 90% confidence level is marked with *, 95% confidence level is marked with **, and 99% confidence level is marked with ***.

### 3.4 Output of Results

The total average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) for the ten companies are shown in Figure 1, and the corresponding P- and T-values are shown in Table 2. The events with abnormal returns are shown in Table 3. " indicates the existence of abnormal returns after the event date, "extend" indicates the existence of abnormal returns throughout the event window, "1" indicates the existence of abnormal returns, and "0" indicates the absence of abnormal returns. "0" means no abnormal return exists.
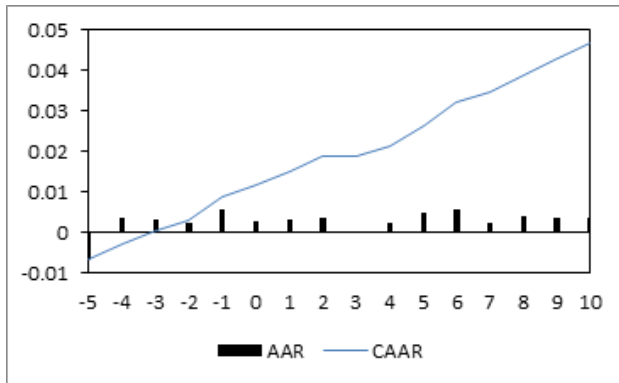
**Figure 1.** Average results for ten companies

**Table 2.** Test results for the average return of ten companies

| data | AAR | CAAR | T-stat | P-value |
| --- | --- | --- | --- | --- |
| -5 | -0.00662 | -0.0066202 | -1.3122 | 0.094736 |
| -4 | 0.00392 | -0.0026998 | -0.37839 | 0.352573 |
| -3 | 0.003399 | 0.00069935 | 0.080032 | 0.468107 |
| -2 | 0.002442 | 0.00314136 | 0.311327 | 0.377778 |
| -1 | 0.005843 | 0.00898408 | 0.796374 | 0.212913 |
| 0 | 0.002901 | 0.01188507 | 0.961733 | 0.168099 |
| 1 | 0.003276 | 0.01516115 | 1.135826 | 0.128023 |
| 2 | 0.003573 | 0.01873405 | 1.31285 | 0.094626 |
| 3 | 0.000258 | 0.01899255 | 1.254846 | 0.104776 |
| 4 | 0.002495 | 0.02148726 | 1.34682 | 0.089028 |
| 5 | 0.004912 | 0.0263992 | 1.577694 | 0.057328 |
| 6 | 0.005865 | 0.0322638 | 1.846092* | 0.032449 |
| 7 | 0.002616 | 0.03487955 | 1.917466* | 0.027598 |
| 8 | 0.004134 | 0.03901391 | 2.066731** | 0.019388 |
| 9 | 0.003885 | 0.04289873 | 2.195469** | 0.014072 |
| 10 | 0.003703 | 0.04660191 | 2.309257** | 0.010471 |

**Table 3.** List of events where abnormal yields occurred

| event_date | security ticker | event | before | after | extend |
| --- | --- | --- | --- | --- | --- |
| 28/03/2013 | GSYH | event_17 | 1 | 1 | 0 |
| 23/03/2019 | ZSYH | event_21 | 1 | 0 | 0 |
| 30/03/2019 | NYYH | event_31 | 1 | 1 | 0 |
| 29/03/2017 | NYYH | event_33 | 1 | 1 | 0 |
| 30/03/2011 | NYYH | event_40 | 0 | 1 | 0 |
| 31/03/2017 | ZGSY | event_43 | 0 | 1 | 0 |
| 22/03/2019 | ZGPA | event_51 | 1 | 0 | 0 |
| 31/03/2017 | ZGPA | event_53 | 0 | 1 | 0 |
| 26/03/2020 | ZGRS | event_60 | 1 | 1 | 1 |
| 28/03/2019 | ZGRS | event_61 | 1 | 0 | 0 |
| 23/03/2018 | ZGRS | event_62 | 1 | 0 | 0 |
| 24/03/2016 | ZGRS | event_64 | 1 | 0 | 0 |
| 30/03/2018 | ZGYH | event_73 | 1 | 1 | 0 |
| 27/03/2014 | ZGYH | event_77 | 1 | 1 | 1 |
| 23/04/2020 | ZGZM | event_81 | 1 | 1 | 1 |
| 26/03/2020 | HTWY | event_91 | 1 | 1 | 1 |

# 4. Description of the Empirical Evidence

## 4.1 Analysis of Results

There were 16 events with abnormal returns out of a total of 96 events, indicating that the domestic annual report effect was less pronounced, and the abnormal returns were dominated by positive abnormal returns. Of the 16 events with abnormal returns, 12 events had ex ante abnormal returns, while 11 events had ex post abnormal returns, suggesting a possible insider phenomenon in the disclosure of annual report events.; In terms of companies, China Life has the highest number of abnormal returns among the 10 companies; in terms of different years, the abnormal returns occurred mainly in the last 4 years, as shown in Figure 2.
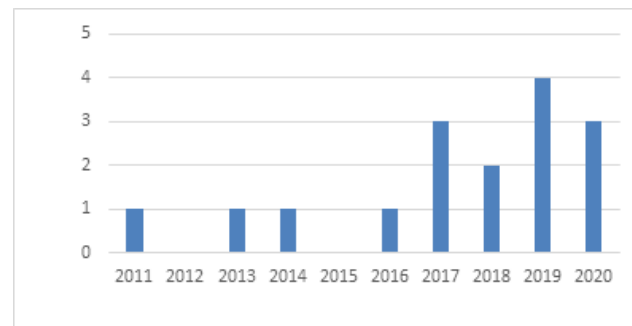


**Figure 2.** Number of abnormal yields by year

## 4.2 Conclusions

### 4.2.1 There is a problem of insider information leakage

The normal situation should be that abnormal stock price fluctuations occur only on the day of the release of the company's annual report. And the abnormal movement before the release of the event indicates that certain institutional investors and individual investors in the market received the information before the company's operation was announced through legal channels and sold and bought in advance, or pulled up the price to sell and pulled down the price to buy. This also indirectly shows that the effectiveness of the A-share market is not that high, and the effectiveness of the enforcement of laws and regulations related to insider trading needs to be strengthened.

### 4.2.2 China's annual report effect is not obvious

The top ten stocks in terms of market capitalization do not reflect the occurrence of annual reports very clearly. In terms of the securities market, China to the present high concentration of equity, the liquidity conditions are not so relaxed, so it may lead to the results of stock movements

are not obvious. In terms of the ten selected Chinese stocks, all of them are SOEs, which have been benefiting from the government's long-term support and have unique advantages in terms of many resources. Investors always believe that SOEs have the government behind them, no matter how good or bad the business results are. So, it will also lead to the study of the event on the stock price impact effect is not obvious.

### 4.3.3 Positive abnormal returns occur mostly

The annual report effect is mainly used to measure the market reaction when listed companies release their annual reports. Positive abnormal returns indicate that market sentiment is high and stock prices are overvalued at this time. Because of the development of the capital market, there are mega-listed companies in the Chinese securities market, and investors become overly concerned about these companies. The behavioral bias of being overly optimistic about these companies after a series of good news of increased surplus can lead to abnormal stock yields. At the same time, the lack of a shorting mechanism in the Chinese market makes investors more willing and able to focus only on positive events.

## Authors' Contributions

Liu Xin, Huang Xi, Students at School of Statistics, Chengdu University of Information Technology .

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