

Coronavirus Impact on the leading stock markets and IPOs Intention

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Abstract. The goal of this research report is to look into the impact of the coronavirus disease (COVID-19) on the stock markets of China and the United States, focusing on the major stock indices in both countries' stock markets while also looking at the performance of companies in various industries during the epidemic. Also, the impact of the epidemic on the IPOs status of firms in various industries, in order to determine which industries and companies are worth paying attention to during the epidemic. Methodology: Based on the S&P Global 100 closing price, a comparison and event study of index closing prices for the aforementioned countries during the COVID-19 pandemic and pre-pandemic. To that purpose, we utilised cross-sectional Mest and non-parametric Mann-Whitney U-tests to look at changes in major stock indexes during the pandemic, cross-sectional t-tests for sample analysis, and OLS (ordinary least the squares) market model to combine the market and industries to make conclusions. Data visualisation, financial indicator calculations, and a clear display of analysis results are required for the success of IPOs efforts. Findings: The study discovered that different industries reacted to the stock market in different ways. There was a positive link between the number of listed firms and their industry stock performance as the market size of the industry grew. Furthermore, different industries have varied reactions to the stock market, and the IPOs activities of companies in different industries will influence the stock market's future development path. Implication: COVID-19 has supported another set of tech industries, although first affecting a portion of traditional industries. Originality: During COVID-19, no research has been done to determine the impact of the stock market on IPOs activities in various industries.

Keywords: Coronavirus Pandemic (COVID-19); Global Equity Markets; Stock Index; IPO.

1. Introduction

1.1 Background

The Coronavirus has wreaked havoc on practically every aspect of society, including the economy and financial markets. The emergence of the virus has turned into one of the most serious risks to the world economy and financial markets [1]. Yang investigated the influence of the coronavirus outbreak on tourism, using the DSGE model, discovered that when the coronavirus outbreak reduces tourism consumption and health, welfare suffers [2]. Financial markets have reacted to recent volatility by dropping sharply, tripping a market-wide circuit breaker four times in March. The safeguard takes a 15-minute break from trading in the hopes of calming the market [3].

According to Renaissance Capital, there have been 24 U.S. IPOs this year, up 85 percent from the same period a year ago, but the majority of those issues were issued before to the bull market's fall. Everything has changed since then. In March, there were only two initial public offerings. As the spread of Covid-19 (the coronavirus) intensifies, Jonathan Breen (2020) said that China IPOs are suffering, with the tide of Chinese listings in Hong Kong coming to a halt [4]. Other initial public offerings (IPOs) scheduled for the second quarter have been postponed, and some companies have had to postpone pre-IPOs investment rounds.

Furthermore, the coronavirus pandemic affects different industries in different ways. COVID-19 has the least impact on the education, professional, and scientific services businesses, according to studies, while it has the biggest impact on the transportation and warehousing, construction, and retail trade industries [5].

Therefore, this rapid and widespread savings epidemic has harmed stock markets in China and the United States, hampered the development of conventional offline businesses, and stifled the

entertainment industry's economic growth. We employ text analysis approaches to address three study questions to better understand the influence of the coronavirus on changes in stock market price indices and the behaviour of corporations in various industries to IPO activities:

Question 1: How does the COVID-19 effect stock market fluctuations in China and the United States, which in turn affect the operating performance of many industries?

Question 2: How will firms' IPOs activities in various industries fare during the pandemic, which influences the stock market and, in turn, the stock market's price changes?

Question 3: What are the distinctions between different industries? Why do various industries behave differently under the coronavirus? And which industries and firms will profit from these changes regarding IPOs?

Then, using cash stock indexes renowned in China and the United States to reflect stock market changes, industry scales and the number of listed businesses in various industries to indicate industry changes, and financial data from companies to demonstrate performance. As a consequence, we discovered that the technology sector, particularly firms related to online education, fared much better under the influence of the coronavirus. Energy, transportation and warehousing, real estate, and classic consumer and construction equities, on the other hand, were the most volatile. Additionally, we discover that when the size of the industry market grows, there is a positive association between the number of listed businesses and their industry stock prices. In contrast, there is a negative association between the number of listed businesses and their industry stock prices when the industry market size shrinks. Evaluating stock market IPOs operations during the epidemic, using financial data given by listed businesses, can help practitioners, capital market players, standard setters, and researchers better comprehend price swings in the stock market. Make smarter decisions by utilising these resources.

Understanding the relationship between IPOs activities and the stock market during the coronavirus period is essential because it can assist companies in all industries make better and more reasonable decisions about whether or not to go public, as well as adapt to stock market responses. This study is also worthwhile because it is difficult to grasp the pattern of impacts between the two without it. Understanding this effect model can assist organisations with financial needs to complete their listing plans in the capital market.

The following is the outline for this article. Section III summarises recent published work and provides a possible solution to the gap in the literature. The methods for gathering and analysing the data are described in Section IV. Sections V and VI present the findings and commentary. Section VII concludes the article by summarising the important arguments and drawing clear conclusions.

1.2 Hypothesis

Financial data changes published by publicly traded and soon-to-be-traded enterprises reveal how well corporations have responded to the stock market during the coronavirus. Two elements are required for the IPOs window to reopen, according to Kathleen Smith, co-founder of Renaissance Capital, and IPOs research firm that manages Renaissance's IPOs exchange traded fund. To begin, market volatility must be decreased. She utilises the Cboe Volatility Index, or VIX, to keep track of this. She believes that the VIX needs to fall below 30 in order for IPOs to thrive. Second, she estimates that it takes four to six weeks for a IPOs to generate a profit. As a result, this study suggests the following research hypothesis: H1: The change in stock market price is related to the performance change of listed firms in various industries and the number of listed companies.

The coronavirus has impacted several businesses in different ways. The coronavirus has the least impact on the education, professional, and technical services businesses, while it has the greatest impact on the transportation and warehousing, construction, and retail trade industries [5]. EquityZen published a list of tech unicorns that could still go public this year, including Actifio, a business that develops enterprise cloud management software. A mobile marketing firm called AppLovin; Asana, a project management software company; Desktop Metal, a 3D printing company; Druva, a cloud data protection software company; JFrog, a software development and distribution tool company;

Sprinklr, a cloud-based customer experience management software company; Vacasa, a vacation property management company; and Velodyne Lidar, a sensor manufacturer for autonomous vehicles. As a result, this study suggests that the research hypothesis H2 be tested: the high-tech industry has prospered throughout the coronavirus pandemic, with a rise in the number of publicly traded businesses.

2. Literature Review

2.1 Review

It is clear that the current pandemic is having the greatest economic impact. The impact on businesses such as education, entertainment, health, travel, and sports were explored by [6]. According to Liu, Manzoor, Wang, Zhang, & Manzoor, in all countries and regions affected, the pandemic has had a significant negative influence on stock market performance [7]. As the pandemic develops, Asian stock markets react more quickly to the outbreak, with some of them recovering significantly. The pandemic mortality rate (bad news) has a significant and positive impact on stock market volatility, whereas the COVID-19 recovery rate has a negative impact (i.e., good news). Furthermore, COVID-19 has an asymmetric volatility impact on the US stock market: bad news influences current US stock market volatility far more than good news [8].

According to IPOs candidates that have been affected by the epidemic yet meet the tough listing standards onshore, the faster clearance procedure should be welcome news [9]. "After the damage dealt by Covid-19, those companies who are still entitled to list on the A-share market should wish to go public even more," he said. "After all, they'll get some extra cash in their pockets." That's always useful, but it's especially so now, given the market's current state. The simplicity of risk disclosure in periodic financial reports is linked to the amount of stock trading and the ease of stock returns, according to the research. By using textual analysis, Lopatta, Alexander, Gastone, and Tammen show that firms' reporting methods are crucial in understanding capital market reactions and that more transparent disclosure reduces stock risk and improves stock performance [10].

2.2 Key debates and controversies

During the outbreak, the stock indexes and public financial reports of firms in many industries in the United States and China provided incremental information for assessment, according to the study. Their impact on investment decisions and IPOs activities in capital markets in many industries, however, is still debatable. According to Him, Sun, Zhang, and Li, most sectors were severely negatively affected by changes in the specific price of each stock in different industries, with the energy and agriculture industries being the most affected. As the COVID-19 pandemic spreads around the world, energy firms are postponing projects and closing mines to protect miners and communities [11]. To assist stem the spread of the virus, some corporations have closed their headquarters and established headquarters offices. In terms of the agricultural condition, the epidemic's spread has forced the government to halt large-scale gatherings, obstructing agricultural activity and wreaking havoc on the agricultural industry. The virus spread fast across the country, wreaking havoc on agriculture, migrant workers, and rural investment. The capital market immediately reflected these changes. COVID-19 has a lower impact on the high-tech industry and other industries. The medical business, information technology, online learning, and other industries not only endured the day's bad effects, but also shown great coping abilities, as their stock values all rose to some level. The stock index ME, on the other hand, has decreased dramatically throughout the pandemic, as have the median returns of other composite indices. The market anticipates negative returns during the post-pandemic window. The Dow Jones Industrial Average, NASDAQ, S&P 500, Shanghai Composite, Shenzhen Component, and CSI 300 all fell short of expectations. It reveals that most industries have had some form of negative impact, causing IPOs capital operations to be delayed [12].

3. Research methods

The influence of changes in stock indexes in China and the United States on investment decisions for IPOs operations in various industries, as well as changes in the primary capital market, is the focus of this research. We use a texture analysis method to answer these research issues. Because the performance changes and investment trends of IPOs and listed firms in various industries during the coronavirus period may be found in the company's regularly publicized financial reports, this is the case. At the same time, major stock indices from both nations may be seen on financial data terminals like WIND and Bloomberg, as well as financial news platforms like Yahoo Finance. Many academics utilise the data analysis + text analysis approach to examine the development of the entire stock market based on a literature review. The study concludes that companies in various industries have diverse attitudes about IPOs by assessing the overall stock market state and performance reports of listed companies provided by today's stock indexes. The anticipation of an IPO activity by a corporation can be expressed in the form of shares. A possible solution to the above three challenges is to examine the performance attitudes of companies in different industries regarding the coronavirus, as well as the relationship between changes in the broader stock market environment and IPOs expectations.

Overall, a mixed technique approach was adopted in this investigation. For all of our research topics, we used internet-based data collection methods. The majority of the information comes from secondary sources, with only a little amount coming from original sources. We focus on the association between changes in market size and the number of listed businesses in different industries in order to investigate the relationship between stock index fluctuations during the coronavirus epidemic and capital market IPOs activities. The data is analysed using quantitative methods. We employ text analysis tools to assess and describe the performance and changes of enterprises throughout the coronavirus period using changes in stock index data, and to better comprehend the impact of the coronavirus pandemic on different industries, based on past research. The first research question can be addressed. We also gathered data on the performance of firms' IPOs efforts in various industries to answer study questions 2 and 3 and looked into the relationship between changes in corporate performance and stock performance during the pandemic.

Major stock indexes in the United States and China are used as research samples in this study, including the Dow Jones Industrial Average, NASDAQ, S&P 500, Shanghai Composite, Shenzhen Component, and CSI 300. During the outbreak, count the types and numbers of publicly traded companies and classify them using normal industry division standards. Financial data reports from many industries are handled at the same time. Analyze how the industry's performance changed and how it responded to the capital market during the COVID-19 epidemic. Use R and Python to model the prediction and test the data in order to examine the data related to the stock index. Excel was used to perform statistical analysis and visual processing on the number and performance of IPOs businesses in various industries in order to better illustrate the final correlation results.

The information was gathered through the use of internet-based data collection tools. We'll need a mix of qualitative and quantitative data, as well as primary and descriptive information. This strategy was chosen because I need to collect information from financial reports on changes in firm performance throughout the coronavirus period for textual analysis, and this information may be located in a database. As a result, Internet databases are a helpful and convenient instrument for data collection. Select the needed representative stock index first, then divide the industries according to GICS standards. We have grouped several related industries together to make investigating industry differences more efficient. The online education industry, for example, is classified as a technological industry. The most recent financial reports and stock performance data were then gathered in detail from the databases of WIND and Bloomberg.

The text analysis method is used in data analysis. Text analytics has the advantage of being able to find a huge number of analytical reports from public financial organisations online. Furthermore, as LOUGHRAN & MCDONALD have mentioned, text analysis is often used in accounting and financial research to assess the impact of qualitative data on equity value [13]. As a result, using text

analysis to assess the content of stock index movements and their potential influence on listed firms is a viable choice. At the same time, according to prior reports, most published papers and working papers in the financial industry use text analysis to assess and process data related to the capital market.

Then we performed preliminary data processing in Excel, including median, maximum, and minimum descriptive statistics, and separated the data into sub-periods, before calculating the mean, standard deviation, and median return. The cross-sectional Mest and nonparametric Mann-Whitney u tests were used to examine the daily returns of each stock index. The difference between the stock's expected return and its actual return is then used to compute abnormal returns. Finally, the influence of events was investigated using a cross-sectional t-test. The OLS (Ordinary Least Squares) market model is used to calculate the predicted return of a stock index [12]:

$$R_{i,t} = \alpha_i + \beta_i R_{i,M_{i,t}} \quad (1)$$

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{i,M_{i,t}}) \quad (2)$$

$$CAR_{i,(t_1,t_2)} = \sum_{t_2}^{t=t_1} AR_{i,t} \quad (3)$$

Where,

$R_{i,t}$ = Return rate of stock i on the Trading Day t .

$R_{i,M_{i,t}}$ = Market return rate of the trading market

α_i = Regression coefficients of the daily return rate of the stock i

β_i = Regression coefficients of the market return rate

$AR_{i,t}$ = Average abnormal return rate of stock i on the trading day t

$CAR_{i,(t_1,t_2)}$ = Cumulative abnormal return rate of stock i in the event window period (t_1, t_2)

Finally, we investigated the relationship between the market size of different industries, that is, the change in the stock market and the number of businesses listed on the stock exchange, using a visual chart to show whether there is a linear relationship and why.

The time span stated is, however, for practical reasons. The financial year is not the same for all businesses. As a result, the time duration for various firm reports varies. We examined reports from both China and the United States during the epidemic, from 2019 to 2021.

4. Results

4.1 Stock index

The large data prediction model for the user's electricity consumption is implemented in the Clementine software.

Using the OLS (Ordinary Least Squares) market model, we calculated the annual volatility changes of the six major stock indicators (Figure 1). During the epidemic, there were significant variations, particularly from 2019 to 2020. It is slowly recovering after a sharp drop. It demonstrates that the company's operating performance has increased and subsequently dropped. The price of stocks fluctuates in lockstep with the economic cycle. Despite the enormous volatility, the stock markets in China and the United States remain quite busy, which is favorable to IPOs and other capital-raising activities.

Research shows that when the stock index's price-earnings ratio is lower, the profitability of the market price relative to the stock is lower, indicating that the stock market's investment recovery period is shorter, the investment risk is lower, and the stock's investment value is higher. In contrast, a greater price-earnings ratio means a longer payback period, increased investment risk, and a lower stock investment value [14]. Figure 2 illustrates that the price-earnings ratio of the stock markets in China and the United States fell throughout the epidemic, showing that the stock market's investment

value is comparatively high. This tendency is then favourable to the IPOs activities during the coronavirus timeframe.



Figure 1. Change in major stock indices – annual rate of change.

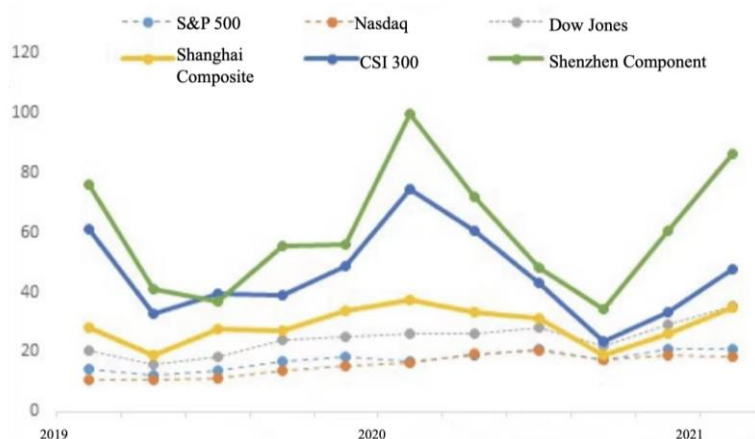


Figure 2. Main index PE.

4.2 IPOs numbers

The substantial changes in stock market prices and stock indexes did not hinder IPOs activities during the outbreak, according to data collected on IPOs activities in the capital market (Figure 3). More companies, on the other hand, chose to leverage the epidemic during the epidemic. The goal of the IPOs is to raise additional money.

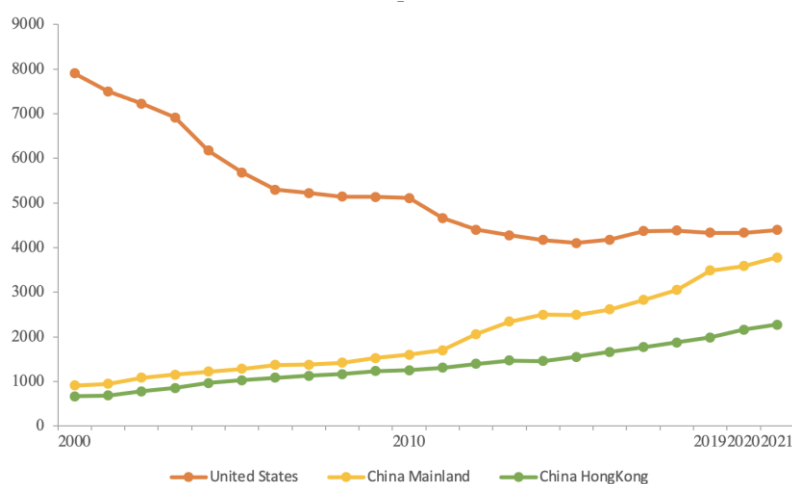


Figure 3. Number of listed companies in US and China.

We can see that the number of listed businesses in the technology and service industries in China and the United States has expanded fast during the epidemic, as has the market size (Figure 4). Shira Ovide proposes two explanations for this phenomenon. To begin with, the epidemic has spawned a unique economy that has helped certain people and businesses, including technology, while wreaking havoc on others. Individuals and businesses have increased their demand for items sold by digital giants in the final year of the crisis. Home shopping, which is popular among Chinese and Americans, has become a need for some people's safety. Households inexorably expanded their purchases of equipment and paid software as employment and school became virtual, while any firm with money to market spent money on a website [15]. According to Thomas Philippon, a finance professor at New York University, the pandemic is being used by internet companies to gain power. In certain circumstances, this entails slashing spending in areas like travel, entertainment, and marketing. Tech behemoths, on the other hand, are pouring money into areas where they may gain a competitive advantage. Simultaneously, the catering business will boost its investment in the food delivery industry, which will surely benefit the growth of technology company apps [6].

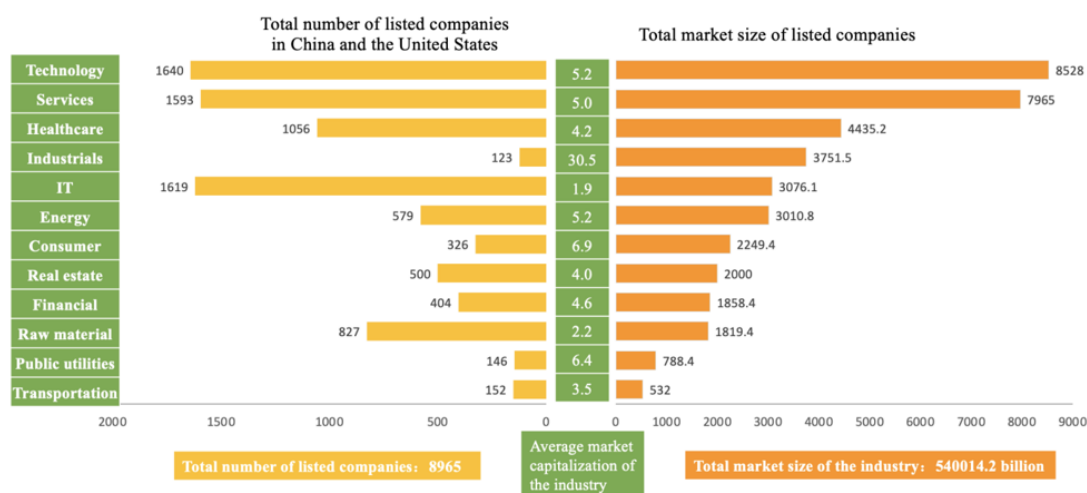


Figure 4. Total Market Size of Listed Businesses.

4.3 Relationships between IPOs numbers and Stock index

The technology industry had a significant influence on the stock market during the epidemic, according to the industry share of S&P 500 and CSI 300 constituents (Figure 5). Combining Figures 1, 2, 3, and 4, it is discovered that there is a positive linear link between the number of listed businesses in various industries and the stock market's development.

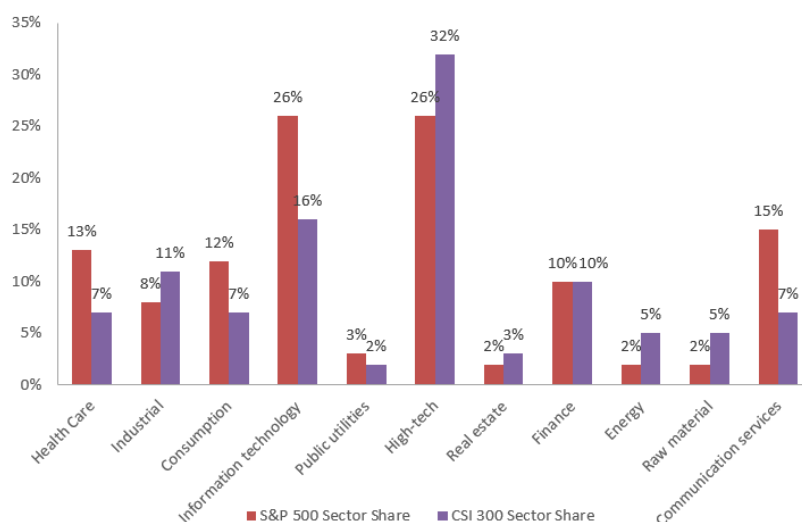


Figure 5. Ratio of main stocks index in different industries.

Furthermore, corporations in the technology sector profited more from the market throughout the outbreak. Meanwhile, the epidemic has hastened the expansion of the technology industry in the capital market, as well as the process of technology company IPOs.

5. Conclusion

To better understand the context of the coronavirus pandemic, this study uses textual analysis to examine how changes in the Chinese and US stock markets affect the performance of listed companies in various industries during the coronavirus pandemic, as well as how IPO activity and stock performance of companies in various industries are affected. Reaction of the stock market when a result, we discover that as the size of an industry's market expands, the number of listed businesses climbs in lockstep with its stock price. The number of listed firms is inversely connected with their industry share prices when the industry market size shrinks. Furthermore, we discovered that organisations in various industries had varying levels of ability to adjust to the epidemic, as well as varying impacts. The energy extraction business has a considerably larger influence than real estate, utilities, or transportation. The tech sector, on the other hand, had the most consistent stock performance. Furthermore, the information and consumer industries outperformed the overall market. Real estate, utilities, and transportation companies, on the other hand, were the most volatile. As a result, the epidemic has aided the growth of the technology industry and provided prospects for greater IPOs activities in the sector.

5.1 Discussion

For research question 1, the coronavirus pandemic has had a negative influence on the business of public corporations in the United States. However, the influence varies depending on the industry. The energy and transportation industries are more affected than the technology and services industries, as seen in the graph above. Average betas differ by industry when it comes to stock performance. With the lowest betas, stocks in the services, technology, and consumer sectors performed the best. In addition, the information industry's performance is above average. Energy, transportation, real estate, financials, and utilities, on the other hand, are among the most volatile sectors. This is because people still need to buy food and other basics during this time. This is owing to the fact that throughout the outbreak, individuals still need to buy food and other needs. Also, because most work can be done from home, stock performance in the information industry may be more stable than average. However, because people are spending less on activities for professions that cannot be done from home, the Covid-19 epidemic has had a greater impact on investors' expectations [5].

For research question 2, in general, when the stock market is good, the number of listed firms is positively associated to the market size of its industry. Hypothesis 1 is also supported. This study implies that the number of listed businesses and market size in different industries have varied effects on stock prices in different industries under different situations, which is consistent with earlier studies. However, several research have revealed that capital market IPOs activities are linked to poor stock performance, as mentioned in the literature review. In different scenarios, attitudes have varying effects on stock performance, partly because companies that are more adaptive to the stock market are thought to be better prepared to respond to crises at unique periods.

For research question 3, changes in a company's performance have varying consequences on the degree of activity in the capital market for different industries. There is a considerable positive association between changes in firm performance and the volume of IPOs activities in the tech industries. The positive association between a company's performance change and the number of listed businesses in the information and consumer industry is a little hazy. The performance change of companies is negatively related to the performance of the number of listed companies in the real estate, utilities, and transportation industries; in addition, the relationship between the performance change of the energy industry and the number of listed companies is not obvious. As a result, the technology industries are better equipped to deal with the new royal pneumonia.

5.2 Limitation

While we can use stock indices to reflect stock market fluctuations during the coronavirus pandemic, and the number of listed firms to symbolise a company's capital market activity, this technique is not relevant to all industries due to the limitations of stock indexes. And we only looked at 6 stock indexes for the analysis; at the same time, other factors will influence the number of listed firms besides the new crown plague. As a result, we were unable to investigate the relationship between different industries and stock performance in our study. Furthermore, the number of listed businesses does not provide enough information to explain why capital market IPOs activities in different industries has behaved differently throughout the coronavirus epidemic. As a result, future research can use questionnaires to better investigate this issue.

Acknowledgements

The authors gratefully acknowledge the academic support from Cambridge University.

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