Introduction

More than 1 year after its outbreak, the coronavirus pandemic continues to wreak havoc on the world's economy. This black swan event has not only affected the quality of life of people all around the world, but it may have long-term consequences. Such consequences cannot be analysed at the current time, but there is plenty of literature around the short-term effects of covid-19 on different areas of the economy. Although investigating the impact of covid-19 on the health of the overall economy is an important topic, I will leave that for other researchers to investigate. Hence, the purpose of this investigative research is to determine the short-term impact of different announcements on stock market returns.

The S&P 500 index has grown by 24.63% since the US encountered the first coronavirus case in its own borders, on January 21st, 2020 (Google, 2021). It is clear that the index fluctuations can be explained in part by the different unexpected announcements, and in part by insider information. This paper aims to identify whether there were significant cumulative abnormal returns (CARs) around 2 vaccine distribution approval announcements during the pandemic using an event study methodology. The abnormal returns of each company will be calculated then aggregated per industry to find industry-specific CARS. Hence, the following research question is put forward:

What is the effect of covid-19 vaccine approval announcements on equity market returns per industry within the S&P 500?

It is important to tackle this question to test the efficiency of the market as well as identify resilient and future-proof industries. The answer to this question is therefore important for investors, as well as for the general workforce. What is more, the above question can be broken down into multiple sub-questions, as per the literature review below. One such question is: "Does the investor structure matter? i.e. varying quantities of the stock owned by buy and hold investors in one company and by speculative investors in another company, e.g. Tesla Inc. vs Berkshire Hathaway". Another sub-question is "Which company fundamentals have an effect on the (abnormal return) in a company or industry?". And "Are the results of the analysis of the chosen event dates consistent with each other?".

Literature review and hypothesis

He, Sun and Zhang (2020) start their paper stating that 2020 will be recorded in history because of an extraordinary turn of events. They study the impact of covid-19 on stock prices through an event-study methodology. The event day of the Covid-19 outbreak is January 23rd, 2020. Their regression shows that the Shanghai and Shenzhen A-shares showed no significant cumulative abnormal returns on the day of the outbreak. However, starting with the 15th day after the outbreak, both stock exchanges' shares significantly dropped. They find that the CARs were negative for the Shanghai stock exchange (SE) and positive for the Shenzhen SE. This discrepancy is explained by differences in industry characteristics of the companies listed on each exchange. In particular, the Shanghai SE listed companies are mostly traditional industries, whereas the Shenzhen SE includes companies which are highly technological. Hence, the following sub-question:

What is the effect of industry characteristics on the market reaction around the time of the vaccine approval announcements?

He, Sun and Zhang (2020) further break the impact of covid-19 on each industry with different event windows. 30 days after the event day, the sectors which showed the largest negative CARs are agriculture (CAR ~ -1.12%), electric&heating (CAR~ -0.59%), transportation (CAR ~ -0.33%), environment (CAR~-0.73%) and information technology (CAR~ -0.65%). These are significant at the 1% confidence level. Lastly, He, Zun and Zhang (2020) investigate how covid-19 impacted companies with different equity properties, and argue they have different capabilities to deal with external shocks. They find that the state-owned, traditional enterprises showed significant negative CARs on all event windows chosen. In contrast, non-state-owned, mainly technological companies showed significant positive CARs on all event windows.

H1: The vaccine approval announcements had no impact on stock prices, per industry.

In another paper, Xiong, Wu, Hou and Zhang (2020) investigate the investors' responses to the covid-19 pandemic using the event study method. They find that institutional investors, namely buy and sell speculators, have a significantly negative impact on market reaction of the

companies. They also show that firms in the industries that are more affected by the emergence of the virus show significantly lower CARs. Cheng, Jang and Kim (2020) examine the effect of the SARS outbreak on Taiwanese hotel stock movements. Hotel stocks had significant declines in earnings and stock prices, as the industry faced higher than average risk during the SARS-outbreak period.

H2: Companies with a higher level of institutional investors exhibit larger absolute abnormal returns during a vaccine approval announcement.

The level of cash also dictates how a company's stock price reacts. Qin, Huang, Shen and Fu (2020) find that the amount of cash held by a company significantly increased as a result of the pandemic. Xiong, Wu, Hou, Zhang (2020) look at how other fundamentals and characteristics of a company and industry may have affected the return. The amount of cash held did not have a significant effect on the CARs they calculated. However, the industry, size, return on assets, the amount of leverage and fixed assets had a significant impact on stock returns.

H3: The amount of leverage of a company in a vulnerable industry had a positive effect on the abnormal return of that company.*

*Vulnerable industry here implies transportation, food and beverage retail, hotel and tourism, postal warehouse, real estate, video entertainment and construction as per Xiong, Wu, Hou and Zhang (2020).

Methodology and data

This paper will use an event study approach to calculate the abnormal returns of individual companies within the S&P 500 index. First, the normal return will be calculated. Then, the normal return will be subtracted from the actual market return during the event window to calculate the abnormal return (AR). Finally, by adding up the individual ARs per event window and industry, I will get cumulative abnormal returns (CAR). The data on stock prices will be collected from Compustat – CRSP and the data on company and industry fundamentals will be taken from the WRDS database. The events to be researched are selected from the American Journal of

Managed Care (AJMC). The AJMC (2020) provides a timeline of all important covid-19 announcements. The events are as follows:

December 11 — FDA Agrees to EUA for COVID-19 Vaccine from Pfizer, BioNTech

December 18 — FDA Signs Off on EUA for Moderna's COVID-19 Vaccine

Planning

The thesis will go in more depth with the relevance of the topic, the literature review, data selection and trimming and methodology. The data will be analysed using STATA. Furthermore, the results will be presented and conclusions as well as limitations will be drawn. In particular, the theoretical framework will be carefully explained and backed by scientific papers. The event study definition will be the one used by MacKinlay (1997).

References

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