

# *The impact of the COVID-19 pandemic on Fintech stock performance: An event study*

**Author:** Vladimir Aleksić  
**Student number:** 562687  
**Thesis supervisor:** Dr. Ruben de Blik  
**Second reader:** Prof. dr. Sjoerd van Bakkum  
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## **ABSTRACT**

The COVID-19 pandemic has had a very significant impact on the world economy and has brought significant changes in the way businesses operate, with financial technology companies being no exception. An event study was conducted with 98 of the top fintech firms in the world by market cap in early 2020, with their returns in the 90 days before and after the first COVID death in their country of origin being compared to the leading indices in that respective country. Furthermore, a linear regression was conducted between the returns in the full 180 day period with a metric comparing the governments' responses to the pandemic to see whether location had an impact on the stock performance of the fintech companies. It was discovered that fintech companies did indeed have positive Cumulative Abnormal Returns for all but one of the periods, with the largest four periods having a significantly positive result. The location does not seem to have an impact on the returns as the regression with the COVID Stringency Index returned a very small, but insignificantly positive effect on the CAR.

# TABLE OF CONTENTS

ABSTRACT ..... ii

TABLE OF CONTENTS ..... iii

LIST OF TABLES ..... iv

LIST OF FIGURES ..... v

CHAPTER 1 Introduction ..... 1

CHAPTER 2 Theoretical Framework ..... 4

    2.1 The fintech industry ..... 4

    2.2 Value Creation in the fintech industry ..... 4

    2.3 The COVID-19 pandemic and its economic impact ..... 5

CHAPTER 3 Data ..... 8

CHAPTER 4 Method ..... 10

CHAPTER 5 Results & Discussion ..... 12

CHAPTER 6 Conclusion ..... 15

REFERENCES ..... 17

## LIST OF TABLES

Table 1        *Event Study Results: CAR*. The CAR in % represents the cumulative abnormal returns for the event window given, as estimated in the event study. Pos. and Neg. represent the number of companies with positive and negative returns, respectively. Z-test and p-values are given accordingly as well.    [11]

Table 2        *Linear Regression Results: CSI* represents the Covid Stringency index, with the constant being the cumulative abnormal return for the [-90;90] period with a CSI of 0.    [12]

## LIST OF FIGURES

Figure 1 *Linear Regression Results: CSI*: The red dots show the CSI index for a country of a given company, while the blue line shows the increase of CARs with each unit of the CSI.

[12]

## **CHAPTER 1 Introduction**

The COVID-19 pandemic has had a very significant impact on the world economy and has brought significant changes in the way businesses operate, with financial technology companies being no exception. The financial technology sector, also known as FinTech, refers to firms using innovative technology, usually related to computing and big data in order to compete with traditional methods of finance. It is also one of the highest growing sectors, with its value in 2020 of \$110.57B projected to grow at a CAGR of 20.3% until 2030. While FinTech firms have experienced various challenges in the wake of the pandemic, such as US consumer spending dropping 9.8% in Q2 2020, they have also had various opportunities such as increased demand for contactless payment solutions by as much as 65% (Visa, 2021) and various lockdown policies forcing consumers to use digital financial services putting them in a unique position compared to traditional financial institutions.

The COVID-19 pandemic has caused unprecedented disruptions in the global economy, leading to massive losses for many businesses. However, the pandemic's impact on the stock market has been mixed, with some industries and sectors experiencing significant gains and losses (Thorbecke, 2020) examined the impact of the pandemic on the overall US stock market using an event study approach. He found that the pandemic had a significant negative impact on stock prices, with the S&P 500 index falling by 20% within one month of the first COVID-19 death in the US. However, the market recovered quickly, with stock prices returning to pre-pandemic levels within six months.

The pandemic's impact on the fintech industry has been widely discussed in literature and among industry professionals, and the young industry has been more resilient to the pandemic than was initially thought, with a large influx of new customers, as much as 56%, and only 18% of firms had resorted to government aid programs during the course of the pandemic.

(World Economic Forum, 2020) That's not to say that it didn't come with challenges, with all variable costs being reported to have increased across the board. However, there is limited empirical research on the pandemic's impact on fintech stock performance, compared to the rest of the market. Therefore, this thesis proposes to investigate the impact of the COVID-19 pandemic on fintech stock performance using an event study approach.

The objective of this thesis is to investigate the impact of the COVID-19 pandemic on fintech stock performance. The research strategy proposed in this thesis aims to investigate the impact of the COVID-19 pandemic on fintech stock performance, which has not been widely explored in the literature. The study will use an event study approach, which will be used to investigate the impact of the pandemic on the stock performance of fintech firms. The research aims to provide new insights and contribute to the existing literature on the topic. While the study draws on existing research on the pandemic's impact on the stock market, its use of a specific industry and event approach combination have not been done before.

The specific research objectives are:

To identify significant events related to the pandemic that affected fintech stock prices. Each event would relate to the date of the first COVID death in the country the company was listed in and would constitute a period of 3 months. Next up, the study will aim to measure the magnitude and direction of the impact of the event on fintech stock prices. Finally, we will compare the impact of the pandemic on fintech stock performance with the overall stock market performance, and the final research question will be: How did firms in the FinTech industry react to events during COVID compared to other sectors?

The proposed methodology for this study is an event study approach, using the Datastream

event study. The study will use daily stock price data for a sample of the top 150 fintech firms listed on the stock market worldwide by market cap, which would be found using Refinitiv Eikon. The sample firms will be selected based on their classification as fintech companies by industry experts and their availability of daily stock price data during the pandemic period. The event study will identify significant events related to the pandemic, such as the start of the pandemic as mentioned above, government announcements, lockdowns, and changes in consumer behavior, and measure their impact on fintech stock prices. The study will compare the results with the overall stock market performance using the market returns, such as the S&P 500.

This thesis is expected to make a significant contribution to the existing literature on the impact of the COVID-19 pandemic on the fintech industry. The study's findings will provide insights into the pandemic's impact on fintech stock performance, which can be useful for investors, policymakers, and industry professionals. The study will also contribute to the broader discussion on the pandemic's impact on the stock market and the economy. We would expect to see that the fintech sector is more robust to these types of events, given their ability to not require much human interaction when being implemented. Overall, this thesis will help to deepen our understanding of the pandemic's impact on the fintech industry and its implications for the future.



## **CHAPTER 2 Theoretical Framework**

### **2.1 The fintech industry**

Fintech companies are defined as those that operate at a crossroad between technology and finance (pwc 2016) and have fully digitized all operations. Furthermore, all of their services are only provided digitally, with no physical interaction or locations available to the consumer in most cases. Most aspects of financial services have been disrupted by fintech innovation, such as authenticating identity and value, transferring, lending and exchanging value, among other things (Tapscott, 2020). The industry covers an extremely broad segment and includes services such as cryptocurrency trading and online banking. A report by McKinsey (2015) has segmented the industry into four different categories: 1) Account management, 2) Financial assets and capital markets, 3) Payments and 4) Lending and financing, with payments being the largest in terms of firms offering the service, and financial assets having the largest revenue share. Research done before the pandemic has shown that the retail consumer group was the target for most fintech startups, and that it had faced issues attracting customers outside digital native millennials. In spite of this, it still showed impressive potential and its funding value grew from 2bn\$ to 19bn\$ in the five years leading up to 2016 (Hach, 2016).

### **2.2 Value Creation in the fintech industry**

Disruptive Innovation Theory, proposed by Clayton Christensen, explains how new entrants disrupt existing industries by introducing simpler, more accessible, and often lower-cost solutions. The key characteristics of this concept are lower cost and simplicity making them more accessible to more customers, targeting markets that weren't able to be served before as well as advancements in tech (Christensen, 1997). The disruptive innovation of fintechs in

the years leading up to the pandemic was mostly seen in its ability to have lower cost structures due to improvements in data analytics, offering less information asymmetry, as well as having much less brick-and-mortar locations compared to incumbents. Although some groups of consumers found this to be a negative of the concept, due to mistrust or lack of customer support, the events of the pandemic have shown this to be a positive due to fintechs being able to offer their full product portfolios even during the strictest period of lockdowns. Fu & Mishra (2022) have estimated that the spread of the pandemic has resulted in a 26% increase in the relative rate of downloads of mobile apps relating to finance offered by fintech firms, an increase that would have likely not occurred in the absence of the pandemic. The study also states that the ability of fintechs to innovate and provide products that suit particular needs have outgrown the mistrust that lingered during the early days of fintech. This is also empirically backed up as the fintech ecosystem has grown substantially from 2019 to 2020, with the transaction values of retail fintech firms growing by 47%, from 357.77bn\$ to 526.21bn\$, which had exceeded the expectations of the companies themselves before the pandemic, showing the positive effect of the pandemic on this particular sector (University of Cambridge et al., 2022). While we are aware of the resilience this sector has shown during the pandemic as shown in the research above, no research yet has focused on how this resilience has transferred to stock pricing, a gap this thesis aims to fill.

### **2.3 The COVID-19 pandemic and its economic impact**

The COVID-19 virus was first discovered in late 2019 in Wuhan, China where it has been linked to a seafood wholesale market in the city. From that moment onwards, it spread worldwide leading to it being declared a pandemic on 12 March 2020 (Ciotti et al., 2020) and staying as such all the way until 7 May 2023, when the global emergency status was lifted (WHO, 2023). This was not the first major pandemic in modern history, with four such events occurring in the past 130 years (Maital, 2020). However, for the three years following its first

outbreak the world has paid a toll with a high loss of human life, as well as increased poverty and other economic repercussions. The latter two are manifested in unpaid rents, unprecedented unemployment, and business closures (Sadang, 2020) This can be attributed to a case of unmitigated risk, as its unprecedented nature left a lot of countries and industries unprepared, both in terms of health and economic damage. (World Economic Forum, 2020)

Research by Deloitte (2020) states that the global economy was impacted in three main ways: by directly affecting production and creating supply chain and market disruptions on the supply side, and financially impacting firms and markets on the demand side. Backing this up, the adjusted returns of US firms fell drastically as news of the outbreak spread with stock prices falling logarithmically by 42% between 19 February and 23 March (Ramelli & Wagner, 2020). Companies have been affected by a myriad of issues, such as supply chain issues for those collaborating with China which had one of the most severe lockdowns, or lower consumer spending on goods and services that require close contact. However, it is worth noting that not all sectors suffered the same fate regarding their returns, with 15 sectors reporting positive returns. Those include computer hardware and software as well as digital services (Thorbecke, 2020). This could be attributed to the behavioral changes brought on by the spread of the virus and the speed of transmission. These factors have influenced the speed of adoption of services that enable communication and exchange of goods and services without physical contact (Fu & Mishra, 2022), with companies such as Zoom having their revenue surge by as much as 300% (Zoom, 2021), and Amazon, a major e-commerce player, having an increase in sales by around 40% (Amazon, 2020). The unprecedented nature of this pandemic has led researchers to focus more on finding ways to prevent such meltdowns from happening in case of another similar event, and one of the main ways to do that is by further acceptance of digital services such as payments, which would better prepare people and could help stop spreads of potential future pandemics. (Amazon, 2020) Anecdotal evidence shows

that the pandemic has indeed accelerated the adoption of digital services, including payments and fintech in general. Several factors indicate that the COVID-19 pandemic has had a positive impact on the perception of fintech services by consumers, such as Percieved Trust, Percieved Value and Social Influence (Candy et al., 2022). While the effect of the pandemic on the economy has been widely studied and known to be profound, not much research has been done about how this change in behaviour, and increased fintech potential has led to changes in stock pricing, especially compared to the market.

## CHAPTER 3 Data

In order to conduct this event study and find out how the fintech industry fared during the COVID-19 pandemic, data was collected for the top 150 firms by market cap, classified as operating in the fintech industry by The Refinitiv Business Classification, (TRBC), a global, comprehensive industry classification owned and operated by Refinitiv (Refinitiv, 2023). The data for those companies was then collected from the Refinitiv Eikon database, starting off with the companies' names and the countries of the respective exchanges where they were listed, and finishing off with their ISIN identifiers, an important identifier necessary for the completion of the event study. The sizes of the companies vary a lot, with the most valuable company, Intuit Inc, an American business software company and founder of the finance app Mint, having a market cap of 120,86 billion USD, while the least valuable company, has a market cap of 2,07 million USD as of June 12, 2023. The mean market cap was 2,15 billion USD.

Next up, for the 28 countries which had companies within the top 150 fintech firms, data was extracted from the Refinitiv Datastream tool in order to find the largest and most important market index in those respective countries, and further data was found in the World Health Organization's global COVID-19 data, with the dates of the first death caused by COVID-19 in the countries of research.

The average amount of companies a country has in the dataset is 5.36. The country with the most firms in the dataset is unsurprisingly the United States, with 40, followed by Japan with 19, India with 12 and Mainland China with 10. On the other hand, 11 countries have only one company in the data set. More descriptive statistics can be found in the appendix.

In summary, the main variables needed for this study are the company ISIN, the largest index of the country it's listed in and its code, and the date of the first COVID-19 death in the same

country. The final piece of data were the results of the event study, giving us the abnormal returns compared to the indices used for comparison.

## CHAPTER 4 Method

This thesis aims to answer its research questions by means of an event study, a method first developed by Fama, Fisher, Jensen and Roll in 1969, which measures the effect of an extraordinary event on a stock's abnormal returns, taking the returns of the stock in question during the event and comparing them to the returns of the market index used for comparison, later comparing them to the abnormal returns in the estimation period (Binder, 1998). The event study tool used is the Datastream event study tool, which in this case will give us market model adjusted returns. The tool takes the prices by day, calculates the returns by subtracting the price of the day before from the current price, and dividing them by the old price. The event start for each stock will be the day of the first COVID-19 related death in its country of listing and will last for 90 days, while the estimation period will consist of the 90 days leading up to that first death. After calculating the abnormal returns for all of the 90 days, they will be summed up in order to find the Cumulative Abnormal Return (CAR). The return for each firm for each day  $t$  will be calculated as follows:  $R_t = a + b \times RM_t + e_t$  with  $a$  and  $b$  signifying the linear nature of the market,  $RM_t$  signifying the market return on that specific day, and  $e_t$  having an expected value of zero (Corrado, 2011). The timeframes that will be looked at are in ascending order: The full estimation period (90 days), the last 45, then the last 20, and finally the last day of the estimation period, followed by the day before and after the first COVID death, the 20, 45 and 90 days before and after the event. In order to test the significance of our study and see whether being a fintech firm actually helped companies in the COVID-19 crisis, a t-test will be conducted giving us the following formula:

$$t \text{ statistic} = \frac{CAR_i(T_1, T_2)}{\sqrt{T_2 - T_1 + 1} \sigma(AR_i)}$$
 where  $\sigma(AR_i)$  is the estimated standard deviation of the abnormal

returns during the estimation period. A further test will be made in order to see whether the country of origin, and by proxy its COVID policies have an effect on fintech returns, a linear regression will be conducted with the full event CAR as the dependent variable, and a

country's COVID Stringency Index, a measure made by the Oxford Coronavirus Government Response Tracker that calculates the strictness of government policies during the days of the event as the independent variable (Mathieu et al., 2020).



# CHAPTER 5 Results & Discussion

Under the Results section, we dive deeper into the econometric analysis introduced in Methodology and determine whether a significant relationship exists with our variable of interest. Therefore, after defining the variables, those being the different time frames before and after the event, we calculated the Cumulative Abnormal Returns, their means, the amount of positive and negative instances for each period, and the Z-score and p-value for the mean given. We can see that for all but one event period we notice a positive average CAR, with the period of 40 days between the event having negative returns. Another thing to note is that only the 45 and 90 day periods, both before the event, and before and after the event are significant, at a 5% and 1% confidence interval, respectively, with the other shorter intervals having no significance at any level. Nonetheless, the results, along with the literature discussing the fintech industry during this period give us a reason to believe that fintech firms had indeed been able to weather the COVID pandemic better than most. Full results can be found in the table below.

Table 1  
*Event Study Results: CAR.* The CAR in % represents the cumulative abnormal returns for the event window given, as estimated in the event study. Pos. and Neg. represent the number of companies with positive and negative returns, respectively. Z-test and p-values are given accordingly as well.

Event Window	CAR in %	Pos.	Neg.	z-test	p-value
[-90;0]	25.73***	59	39	2.5472	0.00543
[-45;0]	19.32**	68	30	1.9123	0.02789
[-20;0]	3.83	59	39	0.379	0.35234
[-1;0]	2.55	57	41	0.253	0.40021
[-1;1]	3.06	59	39	0.300	0.38209
[-20;20]	-0.33	56	42	-0.032	0.51280
[-45;45]	22.54**	69	29	2.209	0.01359
[-90;90]	68.81***	67	31	6.742	0.00000

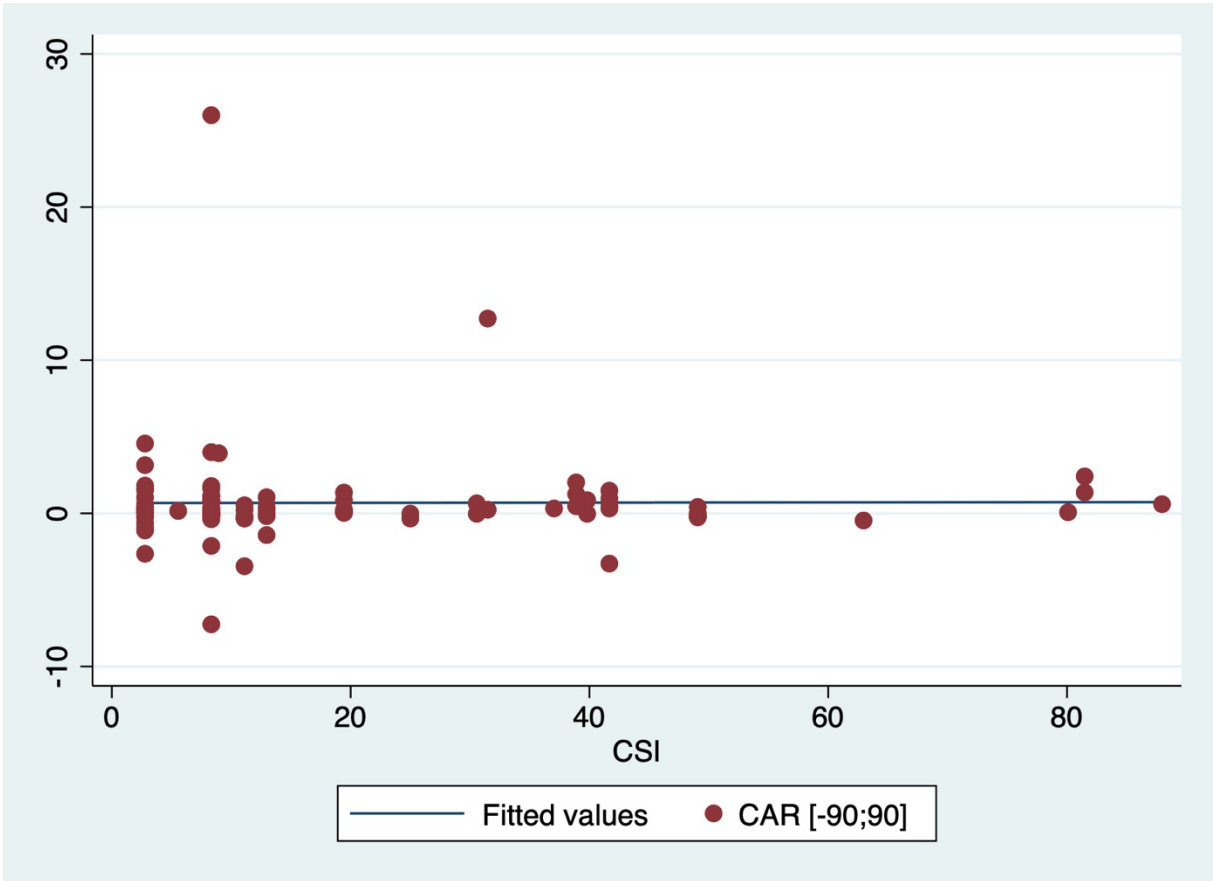
In order to determine whether location had an impact on returns, a linear regression was conducted with the full 180 day window returns as the dependent variable, and the COVID Stringency Index as the independent one. As seen in the table and graph below, there is

almost no effect, with a COVID Stringency Index increase of 1 leading to returns that are 0.00067 higher, and with a p-value of 0.947 we can conclude that these results are not significant.

Table 2  
*Linear Regression Results: CSI* represents the Covid Stringency index, with the constant being the cumulative abnormal return for the [-90;90] period with a CSI of 0.

car9090	Coefficient	Robust std. err.	p-value	R <sup>2</sup>	Obs.	95% confidence interval	
CSI	.0006712	.0101317	0.947	0.000	95	-.0194484	.0207908
cons	.6783296	.4604761	0.144			-.2360846	1.592744

Figure 1  
*Linear Regression Results: CSI:* The red dots show the CSI index for a country of a given company, while the blue line shows the increase of CARs with each unit of the CSI.



This result is something that was expected after the findings of papers that suggested that the fintech industry had performed better than other industries during early 2020, with the rise of its use due to lockdowns and limited physical contact leading to higher perceived value and social influence (Candy et al., 2022), as well as higher adoption of these types of services in

general (Fu & Mishra, 2022). While this study shows some sort of impact, there are numerous limitations that need to be addressed. Firstly, and most importantly, due to a low amount of public fintech firms in the year 2020, the sample size was very limited with only 98 firms, leading to low causality. Moreover, as the date of the start of the event was the first COVID death in the country the company is based in, it is possible that certain fears and spill-over effects have been observed for the countries that experienced the effects of COVID later than others, leading to market reactions before the start of the event. As for the CSI comparison, it is also expected due to the high concentration of firms in a few select countries, with most of those having very similar CSI values (US, Canada, Australia), so not much can be inferred about those effects from our sample.

## CHAPTER 6 Conclusion

This study has focused on finding data to support the hypothesis that fintech firms have been able to outperform the market during the COVID-19 pandemic due to the unique blend of services it offers in such a time, with its online only approach. This, along with a boom in the industry in recent years has made it an interesting topic to study to possibly find out future fintech gains and where the industry is heading as a whole.

The data from Refinitiv Eikon was taken for the 98 top firms in the sector by market cap, country data was taken from the World Health Organization and Refinitiv Datastream for the indices. Furthermore, the methods used were a mix of an event study, run in the Datastream tool, and a linear regression in order to gauge country effects according to pandemic responses in each country. The event period was taken as 90 days after the first COVID death in each country, and the estimation period was selected as the 90 days preceding the event.

The event study has shown that, in most cases, the returns of fintech firms have exceeded those of market indices, with there being more positive outcomes than negative ones in each of the time periods, with four periods, namely the longer ones, having positive and significant abnormal returns. To add to that, only one period has shown a negative average CAR, with the rest having insignificant, however positive results. The results of the regression intended to show country effects were insignificant at best, if not totally irrelevant due to a high concentration of firms in a select few countries.

A message to take from this study is that in extraordinary situations such as one incurred in early 2020, fintech firms have shown resilience due to its unique business models and that investors have shown faith in the model, and it's definitely one to look for in the future, as more and more traditional banks are starting to look towards becoming more technologically advanced.

This study has had its limitation mainly in its low sample of public firms due to fintech being such a new sector with a limited number of firms having gone public by early 2020. An improved study might want to focus on a different metric not reliant on a firm's stock performance in order to gauge its resilience. Another factor to consider is the failure of the regression to show any country effects, and a study with a more balanced spread of countries and regions in its sample might be able to show whether country effects do in fact exist.

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