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Research article

The impact of COVID-19 outbreak on hotels' value compared to previous diseases: the role of ALFO strategy

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ABSTRACT

By using the Event Study Method (ESM), this paper aims to examine the effect of new coronavirus (SARS-CoV-2) disease (COVID-19) outbreak on the market performance of the hotel industry in the U.S. We also compare the impact of COVID-19 outbreak with three previous diseases outbreaks. The results show that there is a negative influence of the diseases outbreaks on stock returns of hotels in the U.S. However, the impact of COVID-19 is incomparably higher in magnitude compared to previous diseases. Furthermore, given the importance of following flexible corporate strategies to adapt to new and unpredicted situations, it is found that the ALFO (assets-light, fee-orientated) strategy acts as a mitigator for the predicted market value drop due to the pandemic.

1. Introduction

The new coronavirus (SARS-CoV-2), firstly reported in Wuhan (China), has spread to all over the world in a short period and has been labelled a pandemic by the World Health Organization (WHO). As this new virus is quite contagious (the associated disease is called COVID-19) and can spread asymptotically, almost all countries have introduced travel bans, declare state of emergency and implement curfew (Chen et al., 2020). In such a negative scenario, tourism and hospitality industry has been the worst affected of all major economic industries by the outbreak of the COVID-19 pandemic. The reason is that people are not allowed to travel domestically/overseas; go to the restaurants/cafes; and are working from home while cutting their spending except basic needs (Thams et al., 2020). International tourist arrivals (overnight visitors) fell by 72% in January–October 2020 over the same period the previous year, expecting a decline by 70%–75% for the whole of 2020 (UNWTO, 2020a).

A relevant issue to better understand the negative effects of the COVID-19 outbreak is focusing in a particular country (UNWTO, 2020b).

Since the first travel restrictions were implemented in China, hospitality firms in the U.S. have been especially damaged from the beginning of the pandemic for several reasons. First, according to the World Travel and Tourism Council the tourism and hospitality industry contribution to the GDP of the U.S. was 8.6% in 2019¹. Travel and spending from Chinese visitors in the U.S. are huge, being China the third-largest source of overseas travel to the United States behind the UK and Japan². In fact, the Chinese market represented 7% of visitors and 16% of spending in 2019 in the U.S. Besides, different from the 2003 SARS and the 2015 MERS outbreaks (also firstly reported in China), the COVID-19 pandemic has forced the U.S. government to implement restrictions all over the country, suggesting that the impact could be longer lasting and more severe. Therefore, according to a January 2020 report by the consulting firm Tourism Economics³, an expected 4.6 million hotel room nights will be lost in 2020 in the U.S. - 8.1 million total through 2024 —, with states and cities around the country feeling the impact.

As this article was written, according to the WHO weekly update on 27th December 2020, the number of confirmed cases in the U.S. amounted to 18,648,989, with 991 deaths per 1 million population and

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¹ Data provided by the WTTC: <https://wttc.org/>.

² According to the U.S. Travel Association: https://www.ustravel.org/system/files/media_root/document/Research_Country-Profile_China.pdf.

³ The report can be found in the following link: <https://s3.amazonaws.com/tourism-economics/craft/Latest-Research-Docs/Coronavirus-scenarios-TE-Oxford-1-31-2020.pdf>.

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328,014 people death, being the U.S. the leading and epicenter of the pandemic⁴. In such a context, the new coronavirus outbreak has created massive global economic and financial shockwaves that have driven stock markets down and that commodity prices have declined dramatically. Obviously, hospitality firms have not been oblivious to this pattern. Previous literature on the effects of epidemic disease outbreaks on financial performance of hotels (Chen et al., 2007) and restaurants Kim et al. (2020) find that the outbreaks lead to a decrease in stock returns. However, the negative effects of the COVID-19 outbreak are expected to be even worse. In this sense, it is important to compare and analyze the different market behavior during and after diseases, so the negative effects over firms' performance can be better managed.

Among all the hospitality industries, hotels are the first to be affected since the restrictions for domestically/overseas travelling directly affect their core business (Chen et al., 2007). For example, restaurants activity can be partially maintained with delivery or take away services. Thus, using the events study method, this paper aims to analyze the effect of the COVID-19 outbreak on the stock prices of listed hotel companies in the U.S. Specifically, we study the effects over the first 20 days after the COVID-19 outbreak in the U.S. (fixed on the 20th January 2020, when the U.S. authorities confirmed the first cases) since our interest is focused on the initial shock effect. Moreover, a comparison of the effects of the COVID-19 disease with previous relevant epidemics in the U.S. is made, such as the human salmonella infections that occurred in 2012, 2013 and 2014 in most of the U.S. states. Although the new coronavirus medical effects are more related to the SARS or the MERS outbreaks, there are several reasons for comparing with the salmonella diseases. On the one hand, the past coronavirus outbreaks occurred in Asia, not directly affecting the U.S. market (Chen et al., 2007). Actually, the SARS and MERS epidemics were rapidly controlled and did not affect the hospitality industry beyond the Eastern Asia setting and in the short run (Ceylan and Ozkan, 2020; Wilder-Smith, 2006). On the other hand, according to the information provided by the U.S. Center for Disease Control and Prevention (CDC) the most recent epidemic diseases affecting the hospitality industry in the U.S. are the salmonella outbreaks⁵. Another reason for selecting the salmonella diseases is related to practical reasons. Since the focus of this study is the hotel industry, it is need that the sample is maintained during a sufficient period of time, and, for example, the SARS outbreak was in 2003, when the majority of the hotels in our sample did not exist in their current situation.

Nevertheless, although the new coronavirus outbreak has affected the core business of the hotel companies, since people are not allowed to travel even inside the country, corporate strategies may be acting as barriers to mitigate the negative effects, at least at first. Thus, given that the study pays attention to the COVID-19 initial shock, we expect that those companies with more flexible corporate policies can better face the new circumstances in the short-run compared to those which cannot easily undo their decisions. The ALFO (assets-light, fee-orientated) strategy, which is gaining more attention in the hospitality industry and literature (Li and Singal, 2019; Demir et al., 2019) can serve as a useful tool to mitigate the huge drop in the returns. Hospitality companies have traditionally hold high fixed costs due to investments in land and building. Such inflexibility to face economic shocks has led some managers to modify their corporate strategies from a fixed assets-based model to a fee-based income one. Companies can implement this asset-light strategy by either spending less to acquire new property or selling properties to reduce the amount of fixed assets they have. Accordingly, we expect that those companies involved in the ALFO strategy can easily readapt their business and, hence, mitigate the effects of the COVID-19 outbreak in the short-run.

⁴ The weekly updates by the WHO can be found here: <https://www.who.int/publications/m/item/weekly-epidemiological-update—29-december-2020>.

⁵ Updated information on recent outbreaks in the U.S. can be found here: <https://www.cdc.gov/outbreaks/index.html>.

Our research contributes to the incipient and diverse literature on the effects of the COVID-19 pandemic literature in several ways. First, as far as we are concerned, our research is among the firsts to provide empirical evidence of the negative effects that the new coronavirus outbreak has had on the financial performance of hotels. Although it is an intuitive idea, it is no less true that the results show an extremely and never seen before negative impact on hotels' stock prices for the U.S. setting. Accordingly, when comparing the new coronavirus to previous recent epidemics relevant for the hotel industry, it is demonstrated that global pandemics such the current one, have more harmful effects over the hotels' financial performance. This issue is especially relevant given that the pandemic is an unexpected event that cannot be easily managed by both governments and managers. Thus, our study also provides some practical implications since it is found that when companies are following more flexible strategies, they can better face unpredicted and unknown events. Specifically, the study shows that ALFO strategy reduces the negative impact of the COVID-19 outbreak on hotels' stock prices and, hence, provide managers with some tools to better manage future pandemics.

The paper is organized as follows. Section 2 contains a brief review of the related literature. Data and empirical design are described in Section 3, while findings are shown and discussed in Section 4. The major conclusions and implications of the research are lastly presented.

2. Literature review

2.1. Tourism and pandemics

The world has experienced many epidemics and diseases and the literature examines how they affect tourism. Blake et al. (2003) focus on the impact of foot and mouth disease (FMD) on tourism in United Kingdom. FMD leads to nationwide decreases in tourism expenditures of domestic and international tourists. The effect is also observed on sectors not only directly related to tourism but also on other industries. Zeng et al. (2005) consider SARS as a short-term perturbation for tourism which causes financial losses in the tourism industry through both international and domestic tourism in China. Kuo et al. (2008) explore the effects of Avian Flu and SARS (severe acute respiratory syndrome), on tourist arrivals in Asian countries. ARMAX model with dynamic autoregressive and moving components and dynamic panel data analysis document that the numbers of infections has a significant influence on tourist arrivals for SARS-affected countries while no effect is found for the case of Avian Flu-affected countries. Likewise, McAleer et al. (2010) compare the impact of SARS and Avian Flu on international tourist arrivals to Asia. The effect of both diseases is measured by the number of cases and deaths. Static fixed effects and dynamic estimations show that SARS has a higher impact on international tourist arrivals than Avian Flu both in the short and long-run. Although Avian Flu has a longer duration, the impact of SARS is found to be more significant. The study of Rosselló et al. (2017) includes a wide range of diseases namely Malaria, Yellow Fever, Dengue, and Ebola and examines their effect on international tourism flows in affected countries. The gravity model estimations show that infectious diseases cause a decrease in tourist arrivals. Among others, Malaria and Yellow Fever have the most decisive role in explaining tourist destination choices. A recent study finds that pandemics negatively affect tourist arrivals in 129 countries for the period of 1996–2018 (Karabulut et al., 2020).

2.2. COVID-19 and hotels' financial performance

The number of studies related to the recent COVID-19 pandemic is rising dramatically, and a strand of this literature examines the effects on tourism. Yang et al. (2020) construct a dynamic stochastic general equilibrium (DSGE) model to explore the effect of pandemic on tourism. The application of the model for COVID-19 documents that tourism demand decreases after the rising health risk. Big data analysis of Polyzos

et al. (2020) document the decreasing demand of air passengers to travel. Sharma and Nicolau (2020) use an open market valuation approach to predict the expected fallout in different tourism and hospitality sub-industries in order to prioritize pandemic related bailout funds.

However, the focus of previous research is on the tourism demand side, and little is known yet about the negative consequences of diseases on the financial performance of hospitality companies. Chen et al. (2007) explore the effect of the severe acute respiratory syndrome (SARS) outbreak on Taiwanese hotel stock prices. Using an event-study approach for seven listed hotels, it is found that earnings and stock prices of the hotels decline significantly in the SARS outbreak period. Kim et al. (2020) use nine events on four food-related epidemic disease outbreaks in the U.S. in the period of 2004–2016 and explore their effect on performance of restaurant firms. The event study methodology shows that epidemic disease outbreaks have a negative influence on stock returns of restaurant firms. Moreover, firm characteristics namely brand reliability, advertising effects, and service types industry mitigate the negative impact of diseases.

In the context of the recent COVID-19 pandemic, Chen et al. (2020) examine the impact of government responses to COVID-19 on the stock returns of travel and leisure companies listed in the U.S. It is found that the Stringency Index has a negative impact on the firms' stock returns, being the companies with a smaller size, less tangibility, and higher cash reserves more resilient to the restrictions. Focusing on the U.S. restaurant industry, Song et al. (2020) document that firms with larger size, more leverage, more cash flows, less ROA, and more internationalization are more resilient to stock declines reacting to COVID-19.

Regarding the hotel firms, Filimonau et al. (2020) find that the managers organizational commitment of Spanish hotels is determined by the levels of organizational resilience and the extent of CSR practices. Thus, the organizational response to COVID-19 affects enhances managers' organizational commitment. Lai and Wong (2020) document the importance of establishing contingency planning for crisis management across crisis periods in the hotels regarding the force labor. Similarly, Stergiou and Farmaki (2021) identify the factors that may influence the hotel employees' ability and willingness to report to work during the pandemic.

Some recent papers are focusing in analyzing the effects of the pandemic on the stock prices and value creation of hotel firms. Lee et al. (2021) find that macroeconomic fluctuations and hospitality stock returns are significantly affected by shocks from the COVID-19 outbreak in China. Likewise, Wu et al. (2021) show that the crisis negatively impact tourism sector stocks in China.

3. Data and empirical design

3.1. Stock market prices and events description

This research focuses on listed hotels included in the BAIRD/STR Hotel Stock Index (HSI) for the U.S.⁶ The representativeness of the hotel industry is assured, since the HSI encompasses the largest market capitalization hotel companies and has been previously used by recent papers such as Das et al. (2020). To be considered, the hotel firm's shares must have been traded during the events window and the company activity must be directly related to hospitality. The final sample is listed in Table 1.

To apply the event study methodology (which is explained in subsection 3.2), hotels' stock returns and market returns for the estimation period at the event window were collected from THOMSON EIKON database. For the case of market returns, the Dow Jones Industrial index has been used, and Fama-French three factors were obtained from Kenneth R. French Data Library.

⁶ For further information about the index: <http://www.hotelnewsnow.com/Stock/BairdSTRHotelStockIndex>.

Table 1. Hotel companies included in the BAIRD/STR Hotel Stock Index.

Ashford Hospitality Trust
Chatham Lodging Trust
Choice Hotels International
DiamondRock Hospitality
Hersha Hospitality Trust
Host Hotels and Resorts
Hyatt Hotels Corporation
InterContinental Hotels Group
Las Vegas Sands Corporation
Marriott International
MGM Resorts International
Pebblebrook Hotel Trust
Red Lion Hotels Corporation
RLJ Lodging Trust
Ryman Hospitality Properties
Service Properties Trust
Sotherly Hotels
Summit Hotel Properties
Sunstone Hotel Investors
The Marcus Corporation

Source: own elaboration based on the Baird/STR Hotel Stock Index.

Although the focus of this research is the COVID-19 outbreak, three previous epidemics are included in the analysis, namely three salmonella diseases that appeared in 2012, 2013 and 2014. Although the profile of the previous diseases and the current COVID-19 is diverse from a medical point of view, comparing them will let us to highlight the importance of the current pandemic. Moreover, a comparison of the obtained results with prior related research such as Kim et al. (2020) can be made. The salmonella diseases outbreaks analyzed affected most of the states (27 in 2012, 30 in 2013 and 43 in 2014) and spread very quickly.

A profile of the epidemic disease outbreaks is reported in Table 2. The event day for the three salmonella disease outbreaks is the first day when the event is released via media (Kim et al., 2020). For the case of COVID-19, although the outbreak was publicly announced by Chinese authorities on the 31st December 2019, the 20th January 2020 has been considered, when the U.S. authorities confirmed the first cases⁷.

3.2. Event study method

Since the study is focused in examining the early effects of the COVID-19 outbreak on hospitality firms' stock performance, we consider the event study methodology (ESM) as appropriate. In fact, this procedure is a common approach to analyze the impact of an economic event on a firm's market value. For the hospitality and tourism research fields, Kim et al. (2020) apply the ESM to examine how epidemic diseases affect the restaurants' financial performances. Similarly, Chen et al. (2007) show that stock prices of Taiwanese hotels are negatively affected from the SARS outbreak.

To apply ESM methodology, the approach of Chen et al. (2007) and Kim et al. (2020) has been followed. We first calculate what hotel firms' stock returns would have been if the COVID-19 event had not happened. Proceeding this way, the component of hospitality firms' stock price change due to firm related events can be separated from that due to movements across the market. Thus, in our study, the component attributed to the coronavirus event is called "abnormal" return (AR). The rationale is that if a certain event like the ones related to the COVID-19

⁷ A list of the relevant coronavirus news can be found at <https://www.nytimes.com/article/coronavirus-timeline.html>.

Table 2. Epidemic disease outbreaks.

Year	Event day	Type of disease	Acronym
2012	2/25	<i>Salmonella infantis</i>	Sal 12
2013	3/2	<i>Salmonella infantis</i>	Sal 13
2014	2/7	<i>Salmonella infantis</i>	Sal 14
2020	1/20	COVID-19	Covid 19

Note: Event days for the three salmonella disease outbreaks are taken from (Kim et al., 2020). For the case of COVID-19 is the day when the U.S. authorities confirmed the first cases.

are bad news, ARs are expected to be negative, suggesting that the market expectations are that a firm's value will decrease.

ARs of hospitality firms' stocks are calculated as follows. The expected returns (ER) of a certain firm stock are firstly calculated. To do so, both the so-called market model (MM) and the Fama-French three factors model (Fama and French, 1993) are used. Data for the three factors model has been retrieved from the Kenneth French's website⁸. Each firm stock return is regressed against the return of the market index, in order to control for the market effect (Berezinets et al., 2019). The models are:

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + \varepsilon_{j,t} \quad (1)$$

$$R_{j,t} = \alpha_j + \beta_j (R_{m,t} - R_{f,t}) + \gamma SMB_t + \delta HML_t + \varepsilon_{j,t} \quad (2)$$

where $R_{j,t}$ is the return of firm stock j on day t ; $R_{m,t}$ represents the return of market index (Dow Jones Industrial) on day t ; SMB_t (*Small Minus Big*) is the difference between stock returns of small and large firms t ; HML_t (*High Minus Low*) is the difference between stock returns of firms with high and low book-to-market ratios at time t ; and $\varepsilon_{j,t}$ is the random error term for firm stock j on day t . Return is calculated as follows:

$$R_{j,t} = (P_{j,t} - P_{j,t-1}) / P_{j,t-1} \quad (3)$$

where $P_{j,t}$ and $P_{j,t-1}$ are the share price at time t and $t-1$, respectively. If a share was not listed on any given day, the data is excluded from that day.

In this study, between 210 trading days and 10 trading days before the event day have been considered (Kim et al., 2020). This is done to underline the fact that no significant changes in AR or CAR of firms before the COVID-19 outbreak appear. Afterwards, the market model is used to compute expected stock returns ($e(R_{j,t})$) in the event window. Following prior related research, the event window considers 20 days after the outbreak (Kim et al., 2020). Proceeding this way, the initial shock effect can be observed⁹. Lastly, the difference between expected and actual returns during the event window is calculated, what has been previously called as AR. Following prior research, cumulative abnormal returns (CARs) are also calculated (Kim et al., 2020; Chen et al., 2007). Hence, the mathematical expressions for AR and CAR are:

$$AR_{j,t} = R_{j,t} - e(R_{j,t}) \quad (4)$$

$$CAR_{j,i} = \sum_{t=0}^i AR_{j,t} \quad (5)$$

where $AR_{j,t}$ and $CAR_{j,i}$ are, respectively the abnormal returns and the cumulative abnormal returns of firm stock j on day t .

To examine the effect of the COVID-19 outbreak on hospitality firm's market value, t -tests to ARs and CARs are carried out (Kim et al., 2020) to determine whether they are significantly different from zero. As stated

⁸ The data can be freely accessed in the following link: http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

⁹ The COVID-19 pandemic is lasting several months, and during such period various events have occurred. Hence, this study focuses only on the first effects. Analysis in the long-run requires to establish additional event dates.

before, a negative significance is expected, indicating that the COVID-19 outbreak negatively affects hotels' market value.

3.3. ALFO strategy influence

A recent and important corporate strategy among the hospitality industry is ALFO (assets-light, fee-orientated) strategy (Li and Singal, 2019; Demir et al., 2019). This is because hospitality firms are generally inflexible and have problems to adapt their activities in periods of economic turbulences. Thus, many companies in the hospitality industry move from a traditional business model (based on maintaining high fixed cost associated to investments in land and building) to an assets-light-based one. In order to implement this asset-light strategy, firms can either spend less to acquire new property or sell properties to reduce the amount of fixed assets they have (Li and Singal, 2019; Demir et al., 2019).

Thus, to investigate the role played by ALFO strategy on the initial effects of the COVID-19 on hotel stock returns, the sample is characterized using two dimensions: capital intensity and working capital ratios. Following prior related research (Demir et al., 2019; Li and Singal, 2019), "capital intensity" is defined as the ratio of capital expenditure to total assets, whereas "working capital" is calculated as the ratio of current assets minus current liabilities and cash and cash equivalents to net assets (Demir et al., 2019). Proceeding this way, the companies in our sample which are following an ALFO strategy are those with low levels of capital intensity and high levels of networking capital at the same time. The criteria for splitting the sample is the median value of both capital intensity and working capital ratios, and the hotels that can be characterized as ALFO followers are: Pebblebrook Hotel Trust, Red Lion Hotels Corporation, RLJ Lodging Trust and Sunstone Hotel Investors.

The rationale is that hotels following such flexible strategy, can better adjust their business to unpredicted events like the coronavirus outbreak. By spending less to acquire new property or selling properties to reduce the amount of fixed assets they have, companies involved in the ALFO strategy may have less suffered the initial negative effects of the COVID-19 outbreak since they can easily readapt their business.

4. Results

4.1. Effects of diseases outbreaks

The results of AR estimations using ESM are shown Table 3 and Figure 1, for the market-model (panel A) and the Fama-French three factors model (panel B). Both models are included in the analysis to verify the consistency of the adjustment and to compare with previous related studies on the salmonella diseases. First, the market model results are weaker than those for the three-factor model in terms of significance, since as the number of explanatory variables increases in the regressions, explanatory power of the equation also increases (Fama and French, 2015; Novy-Marx, 2013). Moreover, in the three factors model, the size factor (SMB) has a low relationship with the market risk premiums. Thus, the small number of shares that comprise our sample causes a sort of minimum size to be evaluated and therefore there is no important difference between the sizes of the companies, which could deliver a more adjusted value. On the other hand, the factor corresponding to the book-to-market ratio (HML) provides the greater relationship within the model, similar to that of the market model alone, but greater when it is controlled for the size and stock book effects.

The general impact of the salmonella diseases in 2012 and 2013 is not significant over the event window, whereas for the 2014 outbreak is significantly negative. These results are similar to those obtained by Kim et al. (2020) for the case of the restaurant industry. For the case of 2012 and 2013, Kim et al. (2020) argue that consumers had accumulated knowledge of the salmonella diseases after experiencing two similar events in 2002 and 2004. However, the negative significant effect of the 2014 outbreak is due to the number of people infected (from 153 in 2013 to 363 in 2014) and the states affected (43 states and Puerto Rico). Thus,

Table 3. Abnormal returns (ARs) results.

Event window	Sal 12	Sal 13	Sal 14	Covid 19
<i>Panel (A): Market Model</i>				
t-10	-1.71 (-0.71)	0.14 (0.10)	-0.79 (-0.23)	-2.93 (-1.19)
t-5	-1.97 (-1.01)	-0.22 (-0.19)	-0.69 (-0.37)	-0.60 (-0.33)
t-4	-2.70 (-0.83)	-0.40 (-0.26)	-1.31 (-0.44)	-1.45 (-0.71)
t-3	-1.97 (-0.75)	-0.24 (-0.11)	-1.21 (-0.72)	-1.18 (-0.73)
t-2	-0.98 (-0.39)	0.59 (0.41)	-2.17 (-1.14)	-1.22 (-0.60)
t-1	-1.58 (-0.52)	-0.39 (-0.12)	-1.44 (-0.72)	-1.41 (-0.89)
t0	-1.76 (-0.66)	-0.39 (-0.24)	-1.97 (-1.24)	-2.72 (-0.66)
t1	-1.53 (-0.51)	-0.87 (-0.43)	-0.93 (-0.53)	-1.70 (-0.65)
t2	-2.45 (-0.62)	-0.62 (-0.36)	-1.14 (-0.51)	-1.49 (-0.80)
t3	-1.28 (-0.34)	0.14 (0.14)	-0.99 (-0.52)	-2.72 (-1.92)*
t4	-2.51 (0.85)	0.08 (0.10)	-1.18 (-0.79)	-2.08 (-0.67)
t5	-1.27 (0.32)	-0.17 (-1.40)	-0.96 (-0.33)	-1.11 (-0.44)
t10	-2.07 (-0.61)	-0.21 (0.11)	-1.20 (-0.41)	-0.13 (-0.10)
t15	-0.19 (-0.10)	0.72 (0.49)	-0.52 (-0.43)	-0.88 (-0.43)
t20	-0.36 (-0.09)	-1.00 (-0.42)	-2.02 (-0.92)	-1.72 (-0.52)
<i>Panel (B): Fama-French three-factor model</i>				
t-10	-1.29 (-0.45)	1.90 (0.66)	-1.84 (-0.42)	-16.10 (-1.14)
t-5	-1.77 (-0.96)	-16.96 (-0.54)	-1.43 (-0.71)	-13.73 (-1.61)
t-4	-2.49 (-0.77)	10.37 (0.43)	-2.50 (-0.88)	-14.73 (-1.01)
t-3	-1.74 (-0.61)	15.36 (0.53)	-1.54 (-0.84)	-14.30 (-1.41)
t-2	-0.78 (-0.28)	-0.05 (-0.10)	-2.63 (-1.34)	-13.85 (-3.92)***
t-1	-1.37 (-0.52)	3.41 (0.88)	-1.51 (-0.76)	-14.63 (-2.60)**
t0	-1.54 (-0.59)	3.65 (0.71)	-2.09 (-1.24)	-16.50 (-3.95)***
t1	-1.32 (-0.52)	10.32 (0.68)	-1.47 (-0.72)	-15.09 (-5.68)***
t2	-2.23 (-0.52)	3.74 (0.18)	-1.23 (-0.52)	-14.93 (-7.84) ***
t3	-1.19 (-0.36)	3.73 (0.23)	-1.59 (-0.84)	-16.55 (-7.45) ***
t4	-2.40 (-0.81)	6.44 (0.37)	-1.55 (-0.99)	-16.68 (-4.25) ***
t5	-1.16 (-0.35)	4.77 (2.10)*	-1.18 (-0.32)	-13.95 (-5.11) ***
t10	-1.98 (-0.66)	-4.21 (-0.14)	-1.48 (-0.52)	-11.22 (-2.80)**
t15	-0.09 (-0.10)	-3.46 (-0.18)	-1.68 (-0.67)	-13.11 (-5.83) ***
t20	-0.11 (-0.10)	7.35 (0.33)	-2.91 (-1.21)	-13.63 (-3.64)***

Note: Numbers in parentheses are the t-statistic, indicating the significance of each value. ***, **, and * indicate the statistical significance at 1%, 5%, and 10% levels, respectively. “t0” is the event day - outbreak of the disease.

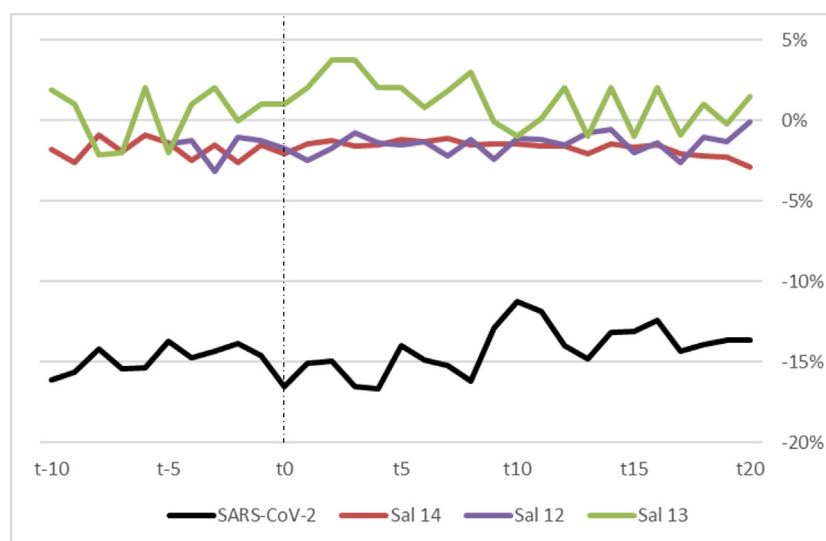


Figure 1. Abnormal returns (AR). Source: own elaboration.

the severity of the outbreak is what explains its significance. Regarding the COVID-19 outbreak, our results show a much stronger negative impact on the hotel stock returns. It is remarkable that, whereas the

negative effect of the 2014 salmonella outbreak disappears after the event day, for the case of the COVID-19 outbreak the negative effect remains significant 15 days after the event date.

Table 4. Cumulative abnormal returns (CARs) results.

Event window	Sal 12	Sal 13	Sal 14	Covid 19
<i>Panel (A): Market Model</i>				
t-0	-1.76 (-0.62)	-0.39 (-0.25)	-1.98 (-1.24)	-2.72 (-0.62)
t-0 ~ t+5	-10.81 (-2.51)*	-1.83 (-0.86)	-7.20 (-1.82)	-11.82 (-4.35) ***
t-0 ~ t+10	-17.40 (-5.35)***	-0.29 (-0.11)	-11.82 (-3.84) **	-17.92 (-4.42) ***
t-0 ~ t+15	-24.34 (-5.34)***	-1.54 (-0.84)	-17.42 (-6.51) ***	-25.01 (-11.14) ***
t-0 ~ t+20	-29.65 (-1.20)	-2.34 (-0.91)	-24.98 (-10.62) ***	-32.03 (-85.26) **
<i>Panel (B): Fama-French three-factor model</i>				
t-0	-1.54 (-0.53)	3.65 (1.72)	-2.09 (-1.35)	-16.5 (-3.95)**
t-0 ~ t+5	-9.85 (-2.33)*	32.66 (1.46)	-9.11 (-2.41)*	-93.70 (-34.32)***
t-0 ~ t+10	-15.91 (-4.95)***	39.22 (1.61)	-16.08 (-5.23)**	-164.10 (-40.41)***
t-0 ~ t+15	-22.39 (-4.96)***	42.29 (2.20)*	-24.55 (-9.17)***	-231.05 (-101.54)***
t-0 ~ t+20	-28.42 (-1.62)	63.90 (2.57)*	-35.57 (-15.16)***	-299.02 (-79.84)***

Note: Numbers in parentheses are the t-statistic, indicating the significance of each value. ***, **, and * indicate the statistical significance at 1%, 5%, and 10% levels, respectively. "t0" is the event day - outbreak of the disease.

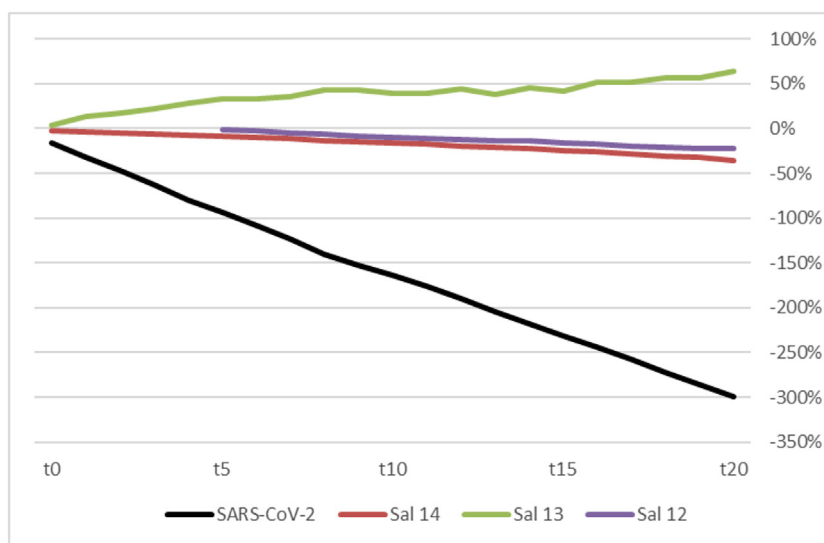


Figure 2. Cumulative abnormal returns (CAR). Source: own elaboration.

For the case of CAR, results are reported in Table 4 and Figure 2 for the case of the COVID-19. In this case, there is a significant negative impact of the disease's outbreaks on CAR, except for the salmonella in 2013 (similar to Kim et al., 2020), over the considered event window.

After applying the ESM to study how some recent epidemic disease outbreaks and the COVID-19 outbreak affect financial performance of hotel firms, it is clear that it exists a significant negative effect, since the beginning of the outbreak. However, unlike the salmonella diseases

Table 5. Cumulative abnormal returns (CARs) results for the COVID-19 outbreak and by ALFO strategy.

Event window	Do not follow ALFO strategy	Follow ALFO strategy
<i>Panel (A): Market Model</i>		
t-0	-2.16 (-0.53)	-0.56 (-0.23)
t-0 ~ t+5	-8.82 (-3.34) **	-2.99 (-1.82)
t-0 ~ t+10	-12.97 (-4.38) ***	-4.96 (-0.84)
t-0 ~ t+15	-17.86 (-7.67) ***	-7.15 (-3.10) **
t-0 ~ t+20	-22.76 (-6.72) ***	-9.27 (-3.31) **
<i>Panel (B): Fama-French three-factor model</i>		
t-0	-13.19 (-1.29)	-3.30 (-1.23)
t-0 ~ t+5	-74.45 (-27.80) ***	-19.25 (-11.51) ***
t-0 ~ t+10	-130.17 (-43.42) ***	-33.93 (-5.16)***
t-0 ~ t+15	-183.12 (-78.39) ***	-47.93 (-20.61) ***
t-0 ~ t+20	-236.91 (-69.65) ***	-62.11 (-22.47) ***

Note: Numbers in parentheses are the t-statistic, indicating the significance of each value. ***, **, and * indicate the statistical significance at 1%, 5%, and 10% levels, respectively. "t0" is the event day - outbreak of the disease.

effect, the COVID-19 outbreak has had a persistent negative impact on hotel firms' value. The global negative economic consequences of the new coronavirus and the fear and concern of the health authorities, that did not know how to deal with this new disease, are behind this pattern never seen before. Based on this, a deeper analysis on which company strategies help to reduce the negative effects of such kind of unpredicted events is necessary.

4.2. Mitigating effect of ALFO strategy

Hotels' sample is divided into two groups to analyze the role played by ALFO strategy in mitigating the negative effects of an epidemic outbreak. Companies which follow an ALFO strategy are those with lower levels of capital intensity ratio and high levels of working capital. Companies that do not meet these requirements are considered to be capital intensive and, hence, not following the ALFO strategy. Applying the ESM, the results obtained are shown in Table 5.

Although the significant negative effect of the COVID-19 is persistent, the effect is significantly lower for those firms that implemented measures in line with the ALFO strategy. Although the significance for the market model is important, this insight is more relevant when analyzing the results derived from the three-factor model. Specifically, there is a difference of around 55% in the CARs between those companies that are following an ALFO strategy and the rest in the first five days after the event day. Such difference is accentuated as the period is extended until 20 days after, where it increases up to 175%. Over a time period of 20 days after the event date, such financial performance difference becomes extremely relevant for hotels. Hence, by following corporate policies that are not capital intensive or better manage working capital provides more flexibility to adapt the business when such kind of pandemics arises.

5. Conclusions and implications

The present study contributes to the recent fertile strand of the literature that analyzes the impact of the COVID-19 outbreak in several and diverse economic and business dimensions. Since the hospitality industry has been one of the most damaged industries all over the world by the pandemic, our study confirms the patterns and the pronounced negative effects that such disease outbreak has had on hotel firms' market value in the short-run. Specifically, our results show that the new coronavirus outbreak has had more harmful effects on hotels' stock prices than previous recent epidemics, namely the salmonella outbreaks that occurred in 2012, 2013 and 2014, that also affected the hospitality business. The impact has been analyzed in the short and medium-term by applying the Event Study Methodology (ESM), and the analysis show that the negative effects of the new coronavirus outbreak are persistent.

Furthermore, a study to determine whether different corporate strategies can mitigate such negative impact is also carried out. The results reveal that the stock returns of those hotels following an ALFO strategy are less affected at an initial stage compared to those which still base their business strategy on being capital intensive. 20 days after the outbreak, there is a difference of almost 175% between those firms that do not follow an ALFO strategy compared to those which do follow it.

Our results may have several implications for different parties, like academicians, managers, practitioners or governments. On the one hand, this paper fills the gap in the extant research on the relationship between COVID-19 outbreak and hotel stock's returns. The COVID-19 pandemic is a source of systematic risk, which fills global stock markets with uncertainty and results in big moves of share prices. Thus, uncertainty needs to be understood from different perspectives and provide managers and practitioners with appropriate tools to reduce the harmful effects of unexpected events.

The analysis of three previous epidemics has helped us to confirm that they have diverse impact on the hotel industry (Kim et al., 2020). Specifically, the 2012 salmonella outbreak is found to be significantly negative whereas the 2013 one is not significant. It can be inferred that

the accumulated knowledge of the 2012 disease outbreak made the hotels face the 2013 outbreak with better information. On the contrary, the 2014 outbreak was again significantly negative due to its severity. Hence, two main dimensions should be considered when facing a disease outbreak: information to handle it and severity. Those are the reasons to understand the extraordinary harmful effects of the COVID-19 outbreak. Since neither companies nor authorities knew how to manage the new coronavirus and since it spread all over the world very quickly, the negative impact on hotel stock prices has been significant. Thus, although such kind of new events are difficult to deal with, there should be greater bidirectional communication between governments and managers. Hence, real and contrasted information will be rapidly spread, allowing final consumers to make decisions with the lower possible risk levels.

From a practical perspective, our results demonstrate that more flexible business strategies can reduce the negative impact of disease outbreaks on hotel firms' market value. In his case, the assets-light fee-orientated (ALFO) strategy allow companies to better manage unpredicted events such as a pandemic. Traditionally, hospitality companies have shown higher fixed costs than other industries, due to investments in land and building. Thus, when economic shocks appear, they are too inflexible to adjust their corporate strategies to mitigate the negative impacts. Consequently, by moving from a fixed assets-based model to a fee-based income one, managers can better prepare their companies to such unpredicted shocks and better resist to market value drops.

Declarations

Author contribution statement

Conrado Diego García-Gómez: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

Ender Demir: Conceived and designed the experiments; Analyzed and interpreted the data; Wrote the paper.

José María Díez-Esteban: Performed the experiments; Contributed reagents, materials, analysis tools or data.

Yuriy Biland: Conceived and designed the experiments; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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