



Anatolia

An International Journal of Tourism and Hospitality Research



ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rana20>

The effect of the COVID-19 outbreak on hospitality and tourism stock returns in Thailand

Surachai Chancharat & Supawat Meeprom

To cite this article: Surachai Chancharat & Supawat Meeprom (2021): The effect of the COVID-19 outbreak on hospitality and tourism stock returns in Thailand, *Anatolia*, DOI: [10.1080/13032917.2021.1982738](https://doi.org/10.1080/13032917.2021.1982738)

To link to this article: <https://doi.org/10.1080/13032917.2021.1982738>



Published online: 12 Oct 2021.



Submit your article to this journal [↗](#)



Article views: 67



View related articles [↗](#)



View Crossmark data [↗](#)



The effect of the COVID-19 outbreak on hospitality and tourism stock returns in Thailand

Surachai Chancharat^a and Supawat Meeprom ^b

^aDepartment of Finance, Faculty of Business Administration and Accountancy, Khon Kaen University (Thailand), Khon Kaen, Thailand; ^bHospitality and Event Department, Faculty of Business Administration and Accountancy, Khon Kaen University (Thailand), Khon Kaen, Thailand

ABSTRACT

This study examines the volatility transmission effects between stock returns and the growth rate of total confirmed COVID-19 cases by using daily data of the hospitality and tourism industry taken from the Stock Exchange of Thailand (SET) index. Augmented Dicky–Fuller (ADF), Phillips–Perron (PP), Kwiatkowski–Phillips–Schmidt–Shin (KPSS), Elliott–Rothenberg–Stock (ERS) and Ng–Perron (NP) unit root tests were used to test, for both series are stationary. The BEKK-GARCH methodology was employed to formulate conditional variance-covariance equations. The results reveal that the pandemic interacts negatively with stock returns from the hospitality and tourism industry. Stock market returns are significantly negatively associated with daily growth in total confirmed COVID-19 cases.

ARTICLE HISTORY

Received 9 May 2021
Accepted 16 September 2021

KEYWORDS

COVID-19; the BEKK-GARCH model; stock return market; Thailand

Introduction

The new coronavirus (COVID-19) pandemic was first discovered in Wuhan, China's central city of Hubei, in December 2019, and then it quickly spread across many countries (Davahli et al., 2020; Lee, Lee, Wu et al., 2021). Over the past several months, many regions have faced an unprecedented spread of the disease and a tragic loss of life (Kaushal & Srivastava, 2021). According to the World Health Organization (WHO), the COVID-19 pandemic has impacted 120,915,219 people and has caused more than 2,674,078 deaths worldwide through March 2021. The pandemic has also significantly affected the world's economy; however, the extent of its actual impact remains unknown due to the lack of available medical interventions and the disease's continued spread. For example, the first quarter of 2020 recorded that the global Gross Domestic Product (GDP) shrunk by 4.9% because of travel restrictions, closed borders and business lockdowns (Deloitte, 2020). The rapid spread of COVID-19 created a sudden, sharp shortfall in revenue for businesses in large industries, and the hospitality and tourism industry was one of the ones most affected (Kaushal & Srivastava, 2021; Song et al., 2021).

The COVID-19 pandemic has severely impacted hospitality and tourism industry, including hotels, airlines, restaurants, special events and convention venues, as all governments were forced to undertake restrictive strategies to slow the disease's spread (Gössling et al., 2020; Seyitoğlu & Ivanov, 2020). For instance, many special events, such as sporting and entertainment events, have been cancelled. In fact, according to a World Tourism Organization (WTO) report, the hospitality and tourism industry contributes approximately \$8.9 trillion to the global GDP, equating to

a contribution of 10.3% in 2019, and creates 330 million jobs (World Tourism Organisation, 2021). Due to the COVID-19 pandemic, the hospitality and tourism industry decreased by 74% in 2020 and lost \$1.3 trillion in export revenue (World Tourism Organisation, 2021). Thus, the influence of the COVID-19 pandemic on the hospitality and tourism industry was inevitable, regardless of region or nationality. This outbreak is predicted to trigger an economic crash. Therefore, how financial markets react to the sudden spread of COVID-19 is a crucial and urgent question.

Hospitality and tourism-related businesses, including hotels, restaurants, special events, leisure activities and airlines, have suffered the most due to countries' restrictions and lockdowns (Kaushal & Srivastava, 2021; song et al., 2021). In 2020, for example, the server capacity utilization of the airline business was reduced by up to 99% compared to equivalent weeks in 2019, which also resulted in negative stock returns for airline businesses (Budd et al., 2020). Similarly, business shutdowns and preventative practices have dropped the service operating capacity of restaurants, causing financial imbalances, risks and vulnerability to the industry (Kim et al., 2021; Song et al., 2021). Thus, the hospitality and tourism industry worldwide has faced dramatic reductions in its business activities (Lee, Lee, Wu et al., 2021). People have had to change their behaviours to prevent the virus from spreading, such as practicing social distancing (Gössling et al., 2020; Seyitoğlu & Ivanov, 2020). Furthermore, some people are afraid of venturing out in public areas, causing a significant reduction in hospitality and tourism businesses. The ensuing economic shock of this pandemic remains indefinite, and there is an urgent need to investigate the influence of COVID-19 through its actual impact on not only macroeconomic conditions but also on stock market reactions. Focusing on how the COVID-19 outbreak affects stock returns of the hospitality and tourism industry is a critical issue to understand economic growth during the pandemic.

When investigating the factors of stock price fluctuations, the financial pricing theory postulates that asset prices are driven by investors' expectations about the discounted values of future cash flows, which are commonly impacted by economic fluctuations (C. C. Lee et al., 2019; Lee, Lee, Xiao et al., 2021). Many studies (e.g. Bulmash & Trivoli, 1991; Rapach et al., 2005) have focused on the effect of macroeconomic conditions on financial markets, such as in the context of stock returns. From a non-macroeconomic perspective, recent crises, such as the SARS outbreak, natural disasters and economic and financial crises, have influenced the performance and development of the service industry, particularly the hospitality and tourism industries (Balsalobre-Lorente & Leitão, 2020; Qiu et al., 2021; Rittichainuwat & Chakraborty, 2009). Clearly, the COVID-19 pandemic represents a massive financial shock to national economies (Mazur et al., 2021). However, the existing literature offers limited empirical insight into hospitality and tourism stock returns. Therefore, this study strives to evaluate the impact of the COVID-19 crisis on hospitality and tourism stock returns to address the current literature gap. The results of this study will help investors devise appropriate investment strategies and assist policymakers in coping with stock market fluctuations.

Literature review

The literature of hospitality and tourism demonstrates that the impact of the COVID-19 pandemic has significantly affected diverse sectors of hospitality and tourism ultimately causing the industry to shut down for months (Kreiner & Ram, 2020). Several empirical studies have investigated the influence of the pandemic on hospitality and tourism businesses. Chen et al. (2021) noted that the outbreak of COVID-19 has brought significant economic losses for the economies of China's offline consumption, especially for catering, entertainment, and tourism. Furthermore, Zenker and Kock (2020) and Altuntas and Gok (2021) confirmed that the pandemic has directly impact on the economy and all manufacturing or hotel industries was from the quarantine measures and the closures of markets and factories. In line with the study of Škare et al. (2021), concluded that the outbreak exerts a much greater destructive influence on the hospitality and tourism industry. In

another study, Jones and Comfort (2020) found the COVID-19 pandemic has reduced greenhouse gas emissions, but it has effect on the reduction of economic and social problems, specifically for service industries in developing countries.

As can be seen from the above literature, the decline is significant enough in hospitality and tourism industry to present concerns over the long-term outlook for this industry. According to Lee, Lee, Wu et al. (2021), they noted that no sector has been as severely impacted by the pandemic as the hospitality and tourism industry. In doing so, the current study extensively analyses the dynamic relationships between the pandemic of COVID-19 and hospitality and tourism industry stock returns.

The COVID-19 pandemic and stock market returns

The current coronavirus outbreak (COVID-19) has affected more than three million people in over 200 regions and countries around the globe (Zaremba et al., 2020). The new pandemic was first identified in Wuhan, a city in the Hubei province of China, in December 2019 (Kaushal & Srivastava, 2021). In early January 2020, the virus quickly spread across the country, causing a high rate of death (McKibbin & Fernando, 2021). Most countries announced lockdowns and initiated international, national and local travel restrictions to respond to the pandemic. People were forced to stay home, and crowded places, such as shopping centres, were shut down (Gössling et al., 2020; Kaushal & Srivastava, 2021). The Global Financial Stability report that the COVID-19 outbreak severely impacted global economic stability and the financial system. In addition, the world GDP fell due to reduced production and changes in consumer demand (Global Financial Stability Report, 2020; Liu et al., 2020). As a result, many countries struggled severely, leading to firm bankruptcies and job losses (X. Qin et al., 2020; Shen et al., 2020).

Furthermore, the COVID-19 outbreak impacted the stock market (Narayan et al., 2020; Sharma & Nicolau, 2020). For instance, Al-Awadhi et al. (2020) investigated the effect of the COVID-19 virus on the Chinese stock market and found that the daily increase in total confirmed COVID-19 cases and deaths led to decreased stock returns across all companies. Liu et al. (2020) also investigated the effect of the COVID-19 pandemic on the stock market in 77 countries, and their results revealed that the pandemic increased investors' pessimistic evaluations of future earnings and raised concerns related to uncertainty. The number of daily new confirmed cases significantly negatively correlates with the returns of major stock indices, specifically in the Asian region. Xu (2021) used daily data to formulate the effect of the COVID-19 pandemic on the stock returns of listed companies in Canada and the U.S. and found that the rapid spread of the pandemic and an increase in COVID-19 cases had a negative effect on the stock market across different industries.

More specifically, the pandemic has had a significant effect on market valuation in the service industry, including hospitality businesses, travel agencies, airlines, cruise lines and rental cars. Bailout investments may be prioritized in the hospitality and tourism industry due to the significant drop in travel and tourism, hotels and other entertainment services (Sharma & Nicolau, 2020). The growing uncertainty concerning the crisis will lead to an increase in the opportunity cost of investment. For instance, due to the impact of the COVID-19 pandemic on the hospitality and tourism industry, travel restrictions and stay-at-home orders reduced the number of people travelling, causing hospitality and tourism stock prices to fall (Carter et al., 2021; Y. Qin et al., 2021). Ozili and Arun (2020) mentioned that a severe effect of COVID-19 on hospitality businesses' liquidity and operational risks seems evident, since service firms would experience significant revenue shortfalls caused by an extreme reduction in customer demand and even temporarily interrupted operations.

In addition, under the uncertainty concerning when COVID-19 damage will be abated, increased operational risks and liquidity shortages would likely make shareholders consider selling the stocks they hold, thereby leading to a sharp decline in the stock returns of service firms. Wu et al. (2021) provided empirical evidence to support the impact of the COVID-19 outbreak on the stock

prices of China's hospitality and tourism. Akron et al. (2020) revealed that the impact of the COVID-19 outbreak initially hit customer and investor confidence, leading to a contraction in investor decisions and individual consumption. Furthermore, Sun et al. (2021) investigated investor decisions during the COVID-19 crisis, and their results suggested that many investors and consumers tended to reduce business investment and slow their decisions to wait for any uncertainty to disappear.

Therefore, due to the uncertainty of the COVID-19 pandemic and the information related to the COVID-19 confirmed cases and number of deaths, many investors did not partake in irrational investment behaviour. Nevertheless, business investment panic does have a negative impact on stock returns, and the COVID-19 pandemic particularly affected hospitality and tourism firms negatively and, by extension, the trading of related stocks (Sikiru & Salisu, 2021). Therefore, many uncertainty determinants caused stock markets to tumble and investment banks to collapse (Sikiru & Salisu, 2021; Song et al., 2021).

The COVID-19 pandemic and the hospitality and tourism industry in Thailand

Thailand is one of the world's leading travel destinations, and the nation's economy is driven by the hospitality and tourism industry. Thus, the COVID-19 pandemic is having an enormous impact on Thailand's economic growth. After confirmation of the first infection in Thailand on 13 January 2020, the number of infected cases increased at a slow rate until March (Tantrakarnapa & Bhopdhornangkul, 2020), Thailand initiated a series of increasing restrictions to prevent the COVID-19 pandemic. The Thai government cancelled large special events and imposed travel bans, closed borders, restricted movement and shut down non-essential shops. Since most countries have announced similar lockdowns, air and intercity travel is down 70–90% compared to the previous year in main cities around the globe (Song et al., 2021).

International traveller arrivals decreased to 6.6 million in the first quarter of 2020, which was a drop from 10.7 million when compared to the first quarter of 2019 (–38.01%). In March 2020, there were only 819,429 tourists compared to 3,473,088 (–76.41%) in March 2019. However, between the second and fourth quarters of 2020, no tourists arrived in Thailand. Overall, there was an 83% drop in international travellers to Thailand by the end of 2020. Every month without tourists results in an approximately 1% decrease in Thailand's GDP, and at least 100,000 people have lost their jobs (United Nations in Thailand, 2021). As presented in Table 1, Thailand ranked 4th in the world for highest loss of hospitality and tourism revenue in 2020.

The COVID-19 outbreak impacted virtually all businesses of the hospitality value chain in Thailand. The effect of closed accommodations and tourism attractions sparked an immediate drop in other service businesses of the supply chain, including special events, catering, laundry services, restaurants and transportation. For example, most restaurants had to close as well,

Table 1. The countries with the biggest tourism revenue loss due to Covid-19 in 2020.

Rank	Country	Revenue loss
1	United States	\$147,245 million USD
2	Spain	\$46,707 million USD
3	France	\$42,036 million USD
4	Thailand	\$37,504 million USD
5	Germany	\$34,641 million USD
6	Italy	\$29,664 million USD
7	United Kingdom	\$27,889 million USD
8	Australia	\$27,206 million USD
9	Japan	\$26,027 million USD
10	Hong Kong	\$24,069 million USD

(Source: US Travel Authorization)

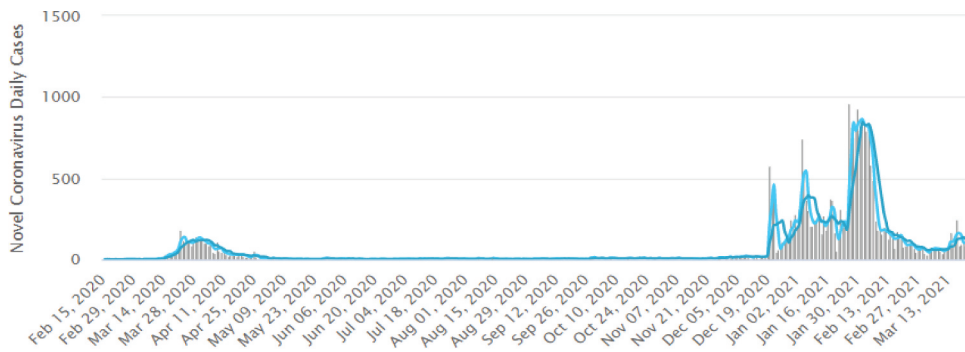


Figure 1. Total coronavirus cases in Thailand from 2020–2021 (Source: WHO).

although a switch to take-away delivery sales allowed some to continue operations. Major airlines, including Thai Airways and Bangkok Airways, have already faced financial struggles (Maneenop & Kotcharin, 2020).

In early 2021, Thailand attempted to recover its hospitality and tourism industries by allowing dine-in restaurants to reopen at a reduced capacity and with strict social distancing guidelines, and it gradually reduced restrictions on domestic and international travel. However, Thailand has been facing a second wave of the COVID-19 pandemic, and the number of confirmed cases has gradually increased compared to the year 2020. Figure 1 shows the total number of COVID-19 cases around the world and in Thailand from 2020–2021. Compared to various other crises and outbreaks in Thailand, such as SARS in 2003, the tsunami in 2004 and the global recession and riots in 2010, the impact of the COVID-19 pandemic is the most severe threat to Thailand's hospitality and tourism industries. As mentioned above, tourist arrivals decreased dramatically in the first quarter of 2020 and became 0% between the second and fourth quarters. Furthermore, the decreased investment in fixed assets was more than twice the decline of the GDP, and household consumption also dropped sharply. Thus, the COVID-19 outbreak caused great disruptions in industrial production activities.

Many hospitality and tourism firms are also facing increased uncertainty over the COVID-19 pandemic, which made the stock market more volatile and less predictable (Phan & Narayan, 2020; Shen et al., 2020). The Thailand Stock Exchange Index began to decrease amid the sudden and dramatic volatility of the pandemic. Therefore, it is crucial for academics, practitioners and policy-makers to evaluate the influence of the COVID-19 outbreak on economic activities and stock markets in Thailand. Focusing on how the COVID-19 outbreak affects the stock returns of the hospitality and tourism industry is a critical issue to understanding Thailand's economic growth and prosperity.

Methodology

This study uses the daily data for total COVID-19 cases in Thailand from 13 January 2020 to 30 December 2020. The data is publicly available from the WHO. Regarding the stock returns in Thailand, this study uses the tourism industry of the SET index from Yahoo Finance. Augmented Dickey–Fuller (ADF) (Dickey & Fuller, 1979; Said & Dickey, 1984), Phillips–Perron (PP) (Phillips & Perron, 1988), Kwiatkowski–Phillips–Schmidt–Shin (KPSS) (Kwiatkowski et al., 1992), Elliott–Rothenberg–Stock (ERS) (Elliott et al., 1996) and Ng–Perron (NP) (Ng & Perron, 2001) unit root tests were used to test the results. In this study, we examine the volatility transmission effects between stock returns and the growth rate of total COVID-19 cases, and they are captured through

the conditional covariance matrix. Therefore, we utilize a simple methodological specification for the conditional mean equation, excluding potential exogenous variables that could have an effect on the volatility of the returns considered, which is given as:

$$R_t = \mu + \phi R_{t-1} + \varepsilon_t \quad (1)$$

where R_t represents a 2×1 vector of daily returns of stock return and the growth rate of total COVID-19 cases at time t ; μ denotes a 2×1 vector of constants; $\phi = \begin{pmatrix} \phi_{11} & \phi_{12} \\ \phi_{21} & \phi_{22} \end{pmatrix}$ is a 2×2 matrix of parameters measuring the impacts of own lagged and cross mean transmissions between three series; and ε_t is the vector of residuals with a conditional covariance matrix H_t given the available information set.

For the conditional variance-covariance equations, multivariate GARCH models, which can efficiently estimate the conditional correlation between financial assets, are the prevailing methods for capturing volatility transmission within financial markets (Bauwens et al., 2006; Huang et al., 2010). This study employed the BEKK-GARCH methodology of Engle and Kroner (1995). The BEKK-GARCH model is a multivariate GARCH that was developed to analyse the correlation of multiple variables with varying time and complexity. The equation of estimated variance in the BEKK-GARCH model can be written as follows:

$$H_t = C'C + A'\varepsilon_{t-1}\varepsilon'_{t-1}A + B'H_{t-1}B \quad (2)$$

where C , A_i and B_i are matrix 2×2 , and C will have a triangular distribution. The equation of the diagonal BEKK-GARCH will provide positive results; a matrix of parameters of the two variables is positive as well. The specifications of the diagonal BEKK-GARCH model in bivariate form can be expressed as:

$$\begin{pmatrix} h_{11,t} & h_{12,t} \\ h_{21,t} & h_{22,t} \end{pmatrix} = C'C + \begin{pmatrix} a_{11} & 0 \\ 0 & a_{21} \end{pmatrix}' \begin{pmatrix} \varepsilon_{1,t-1} & \varepsilon_{1,t-1} \\ \varepsilon_{2,t-1} & \varepsilon_{1,t-1} \end{pmatrix}' \begin{pmatrix} a_{11} & 0 \\ 0 & a_{21} \end{pmatrix} \\ + \begin{pmatrix} b_{11} & 0 \\ 0 & b_{22} \end{pmatrix}' \begin{pmatrix} h_{11,t-1} & h_{12,t-1} \\ h_{21,t-1} & h_{22,t-1} \end{pmatrix} \begin{pmatrix} b_{11} & 0 \\ 0 & b_{22} \end{pmatrix} \quad (3)$$

The BEKK-GARCH model is important in many ways. First, the BEKK-GARCH model's analytical results have positive variables. Second, the model's particle size distribution feature or the distribution of information of diverse characteristics makes the model uncomplicated in terms of volatility reliability. Third, the model can analyse the volatility of time series data exceedingly well and is suited for fewer than five variables. It is always necessary to create, estimate, evaluate, and forecast the co-volatility dynamics of asset returns in a portfolio when analysing the co-movements of financial returns. The BEKK-GARCH model can fulfil this task (Huang et al., 2010).

Empirical results

Figure 2 displays a graph of the stock returns from the service industry and the growth rate of total COVID-19 cases. The descriptive statistics are presented in Table 2.

Table 2 reports descriptive statistics for the stock returns from the service industry and the growth rate of total COVID-19 cases. The average return from the tourism industry is negative, while the growth rate of COVID-19 cases is positive. Furthermore, the growth rate of COVID-19 cases is more volatile than the stock returns from the service industry, as measured by a standard deviation of 8.87%. The stock returns from the service industry are negatively skewed, indicating that this variable has a longer left tail. In contrast, the opposite is true for the growth rate of COVID-19 cases, which is positively skewed. Both are leptokurtic, with the growth rate of total COVID-19 cases exhibiting higher excess kurtosis. Both series have a non-normal distribution, according to the

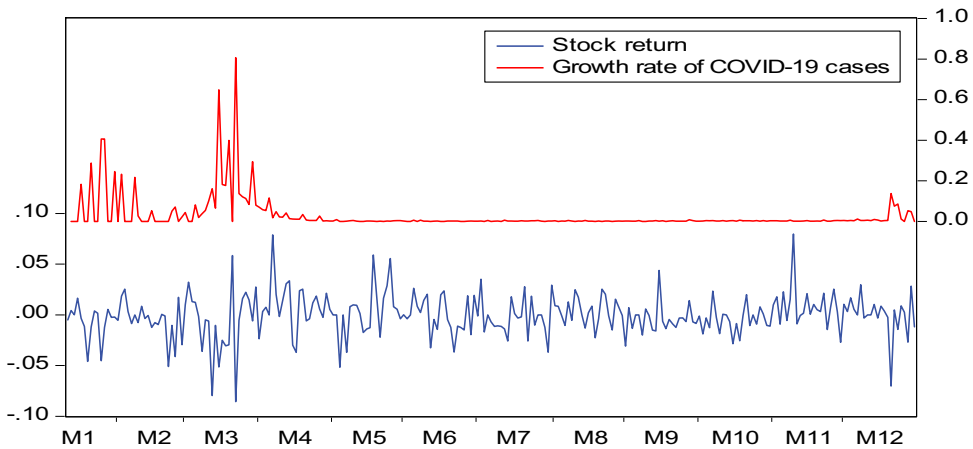


Figure 2. Stock returns from the service industry and the growth rate of total COVID-19 cases.

Table 2. Descriptive statistics.

Variable	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera
Stock return of hospitality and tourism industry	-0.0006	0.0210	-0.1442	6.1090	102.7722***
Growth rate of total COVID-19 cases	0.0284	0.0887	5.3864	38.0398	14,280.4300***

*** indicate significance at the 1% level.

Table 3. Unit root tests.

Variable	ADF	PP	KPSS	ERS	NP
Stock return of hospitality and tourism industry	-15.5013***	-15.6514***	0.1538	-15.5307***	-125.6720***
Growth rate of total COVID-19 cases	-3.8735***	-14.6751***	0.7027	-3.5790***	-23.3087***

*** indicate significance at the 1% level.

Jarque-Berra test statistics. Because of the non-normality, the bootstrap causality test should be applied. Finally, due to the non-normality of these test results, a type of GARCH modelling can be fitted to examine them.

Before the estimation of the diagonal BEKK-GARCH mode, this study employed ADF, PP, KPSS, ERS and NP unit root tests. The null hypothesis of the ADF, PP, ERS and NP tests is that the series are not stationary, while the KPSS test's null hypothesis is stationary. Table 3 indicates that, for both series are stationary and they are used to estimate the diagonal BEKK-GARCH model.

To examine the volatility spillovers between the stock returns from the service industry and the growth rate of total COVID-19 cases, we used the diagonal BEKK-GARCH model presented in Equations 2 and 3. The results are reported in Table 4, which presents the return and volatility transmission between stock returns and the growth rate of COVID-19 cases. The coefficients of the mean equation (ϕ_{11} and ϕ_{21}) are significantly negative only for ϕ_{22} , indicating that the lagged growth rate inversely affects the current growth rate of total COVID-19 cases only. These findings highlight the possibility of short-term predictions of the current growth rate through the past growth rate of total COVID-19 cases.

Regarding the coefficients of the mean equation, own-shock (a_{11} and a_{22}) and own-volatility spillovers (b_{11} and b_{22}), the findings indicate that the lagged shocks and volatility significantly and positively influence their current conditional volatility in the stock returns from the hospitality and tourism industry and the growth rate of total COVID-19 cases. Overall, the own-shock spillover is positive and significant, suggesting that past shocks positively affect the current volatility. In

Table 4. Estimates of diagonal BEKK-GARCH model.

	Coefficient	SE
<i>Mean equation</i>		
μ_1	0.0019	0.0016
ϕ_{11}	0.0155	0.0169
μ_2	0.0024***	0.0003
ϕ_{22}	-0.5116**	0.2275
<i>Variance equation</i>		
c_{11}	4.10E-05**	1.91E-05
c_{12}	-5.78E-07	1.88E-06
c_{22}	-5.90E-07*	3.37E-07
a_{11}	0.2047***	0.049647
a_{22}	1.2556***	0.208874
b_{11}	0.9337***	0.028948
b_{22}	0.8157***	0.019843
LL	1328.4280	
AIC	-10.4144	
SIC	-10.2608	
HQ	-10.3526	

*, ** and *** indicate significance at the 10%, 5% and 1% level respectively.

addition, the coefficients of past own-volatility are higher compared to the coefficients of past own-shocks, implying that past own-volatilities are a more important factor in predicting current volatilities compared to past own-shocks.

Conclusion and implications

The severe impact of the COVID-19 pandemic has led to a substantial reduction in all economic activities across the globe and triggered unprecedented challenges for hospitality and tourism businesses. Specifically, the level of financial distress might become extremely severe for most hospitality and tourism firms; therefore, the financial uncertainties caused by a business's financial performance become proportionally marginalized. Thus, during the COVID-19 crisis, stock market returns in hospitality and tourism may decrease, causing investors to postpone business investments. This study investigated the immediate impact of the COVID-19 pandemic on stock returns from the hospitality and tourism industry in Thailand. Given the peculiarities of the series, and in line with the aim of the study, this research used the BEKK-GARCH model and its asymmetric variant to evaluate the spillover analysis, as well as own and Thai hospitality and tourism shock and volatility spillover effects.

The findings demonstrated that the COVID-19 pandemic interacts negatively with stock returns from the hospitality and tourism industry. Specifically, the stock market returns are significantly negatively associated with daily growth in total confirmed cases caused by the COVID-19 pandemic. Based on this result, the outbreak exerts a pronounced and substantial influence on economic fluctuations and stock price returns in the hospitality and tourism industry. The government should establish policies in response to the economic crisis to avoid causing strong macroeconomic fluctuations. Countries (e.g. Thailand) that rely more on the hospitality and tourism services are more likely to apply a larger economic stimulus package. More importantly, hospitality and tourism industry directly contribute to GDP, foreign spending and business spending are significantly related to monetary policy stimulus as captured by an interest rate cut. In doing so, the findings of the study suggest that countries that rely more on the hospitality and tourism industry introduced a larger economic stimulus package, either in the form of the fiscal or monetary policy response to mitigate the adverse impacts of the COVID-19 outbreak.

In addition, policymakers should create suitable restrictions and containment tools to diminish the uncertainty and fear of the crisis. Furthermore, an investor should be aware of these forces when creating investment strategies. The results also indicated that lagged shocks and volatility have a significantly positive influence on the current conditional volatility in the stock returns of the hospitality and tourism industry and the growth rate of total COVID-19 confirmed cases. The COVID-19 pandemic has impacted stock prices and increased volatility in the Thai hospitality and tourism industry and damaged the financial system. Therefore, proper policy measures must be applied to increase stock prices.

To the best of our knowledge, this study is one of the first to empirically evaluate the effect of the COVID-19 pandemic on the Thai hospitality and tourism industry. Given that the hospitality and tourism industry is one of the most damaged businesses from COVID-19, this study contributes to the hospitality and tourism literature on understanding the impacts of the COVID-19 pandemic on the specific industry. Furthermore, by investigating the role of the increased rate of total confirmed COVID-19 cases on stock returns, this study contributes to the finance and hospitality and tourism literature, offering empirical insights into an epidemiological issue.

Although it addressed the gap in the extant literature on the effect of the COVID-19 pandemic on stock returns from the hospitality and tourism industry in emerging countries, such as Thailand, this study did have some limitations. This study focused on hospitality and tourism on listed firms in general, which implies some missed opportunities for comprehensive knowledge to understand the impact of the COVID-19 outbreak on other hospitality and tourism-related businesses, such as airlines, hotels, travel agencies and restaurants. Such industries may provide different COVID-19 impacts on various industrial characteristics. Furthermore, the BEKK-GARCH model, the methodological approach applied in this study, facilitated exploring spillovers. Further research may use other methodological perspectives, such as a fractionally cointegrated vector autoregressive (FCVAR) model proposed by Johansen and Nielsen (2010) and Johansen and Nielsen (2012), to examine the dynamic features of the interaction between the crisis, stock returns and the economy. Finally, this study only covered hospitality and tourism stocks in Thailand. Although Thailand is heavily dependent on international tourism, other Asian countries, such as Malaysia and Japan, can be used for future work.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes on contributors

Surachai Chancharat, hold a PhD in Economic from the University of Wollongong (Australia), and is Associate Professor in Economics at the Faculty of Business Administration and Accountancy, Khon Kaen University (Thailand). His research interests are financial economics, behavioral finance, and applied econometrics.

Supawat Meeprom, hold a PhD in Marketing and Event Management from Macquarie University (Australia), and is Assistant Professor at the Faculty of Business Administration and Accountancy, Khon Kaen University (Thailand). His research interests are service branding, special event and destination marketing, customer engagement, and consumer behaviour.

ORCID

Supawat Meeprom  <http://orcid.org/0000-0003-0263-4616>

References

- Akron, S., Demir, E., Díez-Esteban, J. M., & García-Gómez, C. D. (2020). Economic policy uncertainty and corporate investment: Evidence from the US hospitality industry. *Tourism Management*, 77(2), 1–10. <https://doi.org/10.1016/j.tourman.2019.104019>
- Al-Awadhi, A. M., Alsaifi, K., Al-Awadhi, A., & Alhammedi, S. (2020). Death and contagious infectious diseases: Impact of the COVID-19 virus on stock market returns. *Journal of Behavioral and Experimental Finance*, 27(3), 100326. <https://doi.org/10.1016/j.jbef.2020.100326>
- Altuntas, F., & Gok, M. S. (2021). The effect of COVID-19 pandemic on domestic tourism: A DEMATEL method analysis on quarantine decisions. *International Journal of Hospitality Management*, 92(1), 1–9. <https://doi.org/10.1016/j.ijhm.2020.102719>
- Balsalobre-Lorente, D., & Leitão, N. C. (2020). The role of tourism, trade, renewable energy use and carbon dioxide emissions on economic growth: Evidence of tourism-led growth hypothesis in EU-28. *Environmental Science and Pollution Research*, 27(36), 45883–45896. <https://doi.org/10.1007/s11356-020-10375-1>
- Bauwens, L., Laurent, S., & Rombouts, J. V. (2006). Multivariate GARCH models: A survey. *Journal of Applied Econometrics*, 21(1), 79–109. <https://doi.org/10.1002/jae.842>
- Budd, L., Ison, S., & Adrienne, N. (2020). European airline response to the COVID-19 pandemic – Contraction, consolidation and future considerations for airline business and management. *Research in Transportation Business & Management*, 37(4), 1–7. <https://doi.org/10.1016/j.rtbm.2020.100578>
- Bulmash, S. B., & Trivoli, G. W. (1991). Time-lagged interactions between stocks prices and selected economic variables. *The Journal of Portfolio Management*, 17(4), 61–67. <https://doi.org/10.3905/jpm.1991.409351>
- Carter, D., Mazumder, S., Simkins, B., & Sisneros, E. (2021). The stock price reaction of the COVID-19 pandemic on the airline, hotel, and tourism industries. *Finance Research Letters*, 1–15. <https://doi.org/10.1016/j.frl.2021.102047>
- Chen, H., Qian, W., & Wen, Q. (2021). *The impact of the COVID-19 pandemic on consumption: Learning from high-frequency transaction data*. American Economic Association.
- Davahli, M. R., Karwowski, W., Sonmez, S., & Apostolopoulos, Y. (2020). The hospitality industry in the face of the COVID-19 pandemic: Current topics and research methods. *International Journal of Environmental Research and Public Health*, 17(20), 1–20. <https://doi.org/10.3390/ijerph17207366>
- Deloitte. (2020). *Respond, recover, thrive: An evolving perspective on the economic impacts of COVID-19*. Deloitte Touche Tohmatsu Jaiyos. <https://www2.deloitte.com/content/dam/Deloitte/th/Documents/about-deloitte/th-about-an-evolving-perspective-on-the-economic-impacts.pdf>
- Dickey, D. A., & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American Statistical Association*, 74(366a), 427–431. <https://doi.org/10.1080/01621459.1979.10482531>
- Elliott, G., Rothenberg, T. J., & Stock, J. (1996). Efficient tests for an autoregressive unit root. *Econometrica*, 64(4), 813–836. <https://doi.org/10.2307/2171846>
- Engle, R. F., & Kroner, K. F. (1995). Multivariate simultaneous generalized ARCH. *Econometric Theory*, 11(1), 122–150. <https://doi.org/10.1017/S0266466600009063>
- Global Financial Stability Report. (2020). *Global Financial Stability Report*. International Monetary Fund. Retrieved 20 March from <https://www.imf.org/en/Publications/GFSR/Issues/2020/04/14/global-financialstability-report-april-2020>
- Gössling, S., Scott, D., & Hall, C. M. (2020). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 29(1), 1–20. <https://doi.org/10.1080/09669582.2020.1758708>
- Huang, Y., Su, W., & Li, X. (2010). Comparison of BEKK GARCH and DCC GARCH models: An empirical study. *International Conference on Advanced Data Mining and Applications*, Springer.
- Johansen, S., & Nielsen, M. Ø. (2010). Likelihood inference for a nonstationary fractional autoregressive model. *Journal of Econometrics*, 158(1), 51–66. <https://doi.org/10.1016/j.jeconom.2010.03.006>
- Johansen, S., & Nielsen, M. Ø. (2012). Likelihood inference for a fractionally cointegrated vector autoregressive model. *Econometrica*, 80(6), 2667–2732. <https://doi.org/10.3982/ECTA9299>
- Jones, P., & Comfort, D. (2020). A commentary on the COVID-19 crisis, sustainability and the service industries. *Journal of Public Affairs*, 20(4), 1–5. <https://doi.org/10.1002/pa.2164>
- Kaushal, V., & Srivastava, S. (2021). Hospitality and tourism industry amid COVID-19 pandemic: Perspectives on challenges and learnings from India. *International Journal of Hospitality Management*, 92(1), 1–9. <https://doi.org/10.1016/j.ijhm.2020.102707>
- Kim, J., Kim, J., & Wang, Y. (2021). Uncertainty risks and strategic reaction of restaurant firms amid COVID-19: Evidence from China. *International Journal of Hospitality Management*, 92(1), 1–10. <https://doi.org/10.1016/j.ijhm.2020.102752>
- Kreiner, N. C., & Ram, Y. (2020). National tourism strategies during the Covid-19 pandemic. *Annals of Tourism Research*, 89(4) 1–7. <https://doi.org/10.1016/j.annals.2020.103076>

- Kwiatkowski, D., Phillips, P. C., Schmidt, P., & Shin, Y. (1992). Testing the null hypothesis of stationarity against the alternative of a unit root: How sure are we that economic time series have a unit root? *Journal of Econometrics*, 54(1–3), 159–178. [https://doi.org/10.1016/0304-4076\(92\)90104-Y](https://doi.org/10.1016/0304-4076(92)90104-Y)
- Lee, C. C., Lee, C. C., & Lien, D. (2019). Do country risk and financial uncertainty matter for energy commodity futures? *Journal of Futures Markets*, 39(3), 366–383. <https://doi.org/10.1002/fut.21976>
- Lee, C.C., Lee, -C.-C., & Wu, Y. (2021). The impact of COVID-19 pandemic on hospitality stock returns in China. *International Journal of Finance & Economics*, 1–14. <https://doi.org/10.1002/ijfe.2508>
- Lee, -C.-C., Lee, -C.-C., & Xiao, S. (2021). Policy-related risk and corporate financing behavior: Evidence from China's listed companies. *Economic Modelling*, 94(1), 539–547. <https://doi.org/10.1016/j.econmod.2020.01.022>
- Liu, H., Manzoor, A., Wang, C., Zhang, L., & Manzoor, Z. (2020). The COVID-19 outbreak and affected countries stock markets response. *International Journal of Environmental Research and Public Health*, 17(8), 1–19. <https://doi.org/10.3390/ijerph17082800>
- Maneepop, S., & Kotcharin, S. (2020). The impacts of COVID-19 on the global airline industry: An event study approach. *Journal of Air Transport Management*, 89(8), 1–6. <https://doi.org/10.1016/j.jairtraman.2020.101920>
- Mazur, M., Dang, M., & Vega, M. (2021). COVID-19 and the march 2020 stock market crash. Evidence from S&P1500. *Finance Research Letters*, 38, 101690. <https://doi.org/10.1016/j.frl.2020.101690>
- McKibbin, W., & Fernando, R. (2021). The global macroeconomic impacts of COVID-19: Seven scenarios. *Asian Economic Papers*, 20(1–30), 1–30. https://doi.org/10.1162/asep_a_00796
- Narayan, P. K., Devpura, N., & Wang, H. (2020). Japanese currency and stock market—What happened during the COVID-19 pandemic? *Economic Analysis and Policy*, 68(4), 191–198. <https://doi.org/10.1016/j.eap.2020.09.014>
- Ng, S., & Perron, P. (2001). Lag length selection and the construction of unit root tests with good size and power. *Econometrica*, 69(6), 1519–1554. <https://doi.org/10.1111/1468-0262.00256>
- Ozili, P. K., & Arun, T. (2020). *Spillover of COVID-19: Impact on the global economy*. https://mpira.ub.uni-muenchen.de/99850/1/MPRA_paper_99850.pdf
- Phan, D. H. B., & Narayan, P. K. (2020). Country responses and the reaction of the stock market to COVID-19—A preliminary exposition. *Emerging Markets Finance and Trade*, 56(10), 2138–2150. <https://doi.org/10.1080/1540496X.2020.1784719>
- Phillips, P. C., & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika*, 75(2), 335–346. <https://doi.org/10.1093/biomet/75.2.335>
- Qin, X., Huang, G., Shen, H., & Fu, M. (2020). COVID-19 pandemic and firm-level cash holding—moderating effect of goodwill and goodwill impairment. *Emerging Markets Finance and Trade*, 56(10), 2243–2258. <https://doi.org/10.1080/1540496X.2020.1785864>
- Qin, Y., Chen, J., & Dong, X. (2021). Oil prices, policy uncertainty and travel and leisure stocks in China. *Energy Economics*, 96(4), 1–11. <https://doi.org/10.1016/j.eneco.2021.105112>
- Qiu, S., Jiang, J., Liu, X., Chen, M.-H., & Yuan, X. (2021). Can corporate social responsibility protect firm value during the COVID-19 pandemic? *International Journal of Hospitality Management*, 93(2), 1–12. <https://doi.org/10.1016/j.ijhm.2020.102759>
- Rapach, D. E., Wohar, M. E., & Rangvid, J. (2005). Macro variables and international stock return predictability. *International Journal of Forecasting*, 21(1), 137–166. <https://doi.org/10.1016/j.ijforecast.2004.05.004>
- Rittichainuwat, B. N., & Chakraborty, G. (2009). Perceived travel risks regarding terrorism and disease: The case of Thailand. *Tourism Management*, 30(3), 410–418. <https://doi.org/10.1016/j.tourman.2008.08.001>
- Said, S. E., & Dickey, D. A. (1984). Testing for unit roots in autoregressive-moving average models of unknown order. *Biometrika*, 71(3), 599–607. <https://doi.org/10.1093/biomet/71.3.599>
- Seyitoğlu, F., & Ivanov, S. (2020). A conceptual framework of the service delivery system design for hospitality firms in the (post-)viral world: The role of service robots. *International Journal of Hospitality Management*, 91(8), 1–10. <https://doi.org/10.1016/j.ijhm.2020.102661>
- Sharma, A., & Nicolau, J. L. (2020). An open market valuation of the effects of COVID-19 on the travel and tourism industry. *Annals of Tourism Research*, 83(4), 102990. <https://doi.org/10.1016/j.annals.2020.102990>
- Shen, H., Fu, M., Pan, H., Yu, Z., & Chen, Y. (2020). The impact of the COVID-19 pandemic on firm performance. *Emerging Markets Finance and Trade*, 56(10), 2213–2230. <https://doi.org/10.1080/1540496X.2020.1785863>
- Sikiru, A. A., & Salisu, A. A. (2021). Hedging against risks associated with travel and tourism stocks during COVID-19 pandemic: The role of gold. *International Journal of Finance & Economics*, 1–11. <https://doi.org/10.1002/ijfe.2513>
- Škare, M., Soriano, D. R., & Porada-Rochoń, M. (2021). Impact of COVID-19 on the travel and tourism industry. *Technological Forecasting and Social Change*, 163(2), 1–14. <https://doi.org/10.1016/j.techfore.2020.120469>
- Song, H. J., Yeon, J., & Lee, S. (2021). Impact of the COVID-19 pandemic: Evidence from the US restaurant industry. *International Journal of Hospitality Management*, 92(1), 1–7. <https://doi.org/10.1016/j.ijhm.2020.102702>
- Sun, Y., Bao, Q., & Lu, Z. (2021). Coronavirus (Covid-19) outbreak, investor sentiment, and medical portfolio: Evidence from China, Hong Kong, Korea, Japan, and US. *Pacific-Basin Finance Journal*, 65(1), 1–22. <https://doi.org/10.1016/j.pacfin.2020.101463>

- Tantrakarnapa, K., & Bhopdhornangkul, B. (2020). Challenging the spread of COVID-19 in Thailand. *One Health*, 11, 1–10. <https://doi.org/10.1016/j.onehlt.2020.100173>
- United Nations in Thailand. (2021). *Thailand economic focus: Tourism industry plummets amid COVID-19 pandemic*. <https://thailand.un.org/en/53804-thailand-economic-focus-tourism-industry-plummets-amid-covid-19-pandemic>
- World Tourism Organisation. (2021). *UNWTO world tourism barometer and statistical annex*. World Tourism Organization. <https://www.e-unwto.org/doi/epdf/10.18111/wtobarometereng.2021.19.1.1>
- Wu, W., Lee, -C.-C., Xing, W., & Ho, S.-J. (2021). The impact of the COVID-19 outbreak on Chinese-listed tourism stocks. *Financial Innovation*, 7(1), 1–18. <https://doi.org/10.1186/s40854-021-00240-6>
- Xu, L. (2021). Stock return and the COVID-19 pandemic: Evidence from Canada and the US. *Finance Research Letters*, 38, 101872. <https://doi.org/10.1016/j.frl.2020.101872>
- Zaremba, A., Kizys, R., Aharon, D. Y., & Demir, E. (2020). Infected markets: Novel coronavirus, government interventions, and stock return volatility around the globe. *Finance Research Letters*, 35, 1–7. <https://doi.org/10.1016/j.frl.2020.101597>
- Zenker, S., & Kock, F. (2020). The coronavirus pandemic—A critical discussion of a tourism research agenda. *Tourism Management*, 81(6), 1–4. <https://doi.org/10.1016/j.tourman.2020.104164>