

Journal of Hospitality Financial Management

The Professional Refereed Journal of the International Association of Hospitality Financial Management Educators

Volume 29
Issue 1 *Special Issue: Economics of the
Foodservice System*

Article 2

2021

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Recommended Citation

Lee, Seoki; Song, Hyoungju; Lin, Michael S.; and Sharma, Amit (2021) "Impacts of COVID-19 on the U.S. Restaurant Industry from the Global Perspective," *Journal of Hospitality Financial Management*: Vol. 29 : Iss. 1 , Article 2.

DOI: <https://doi.org/10.7275/x78z-g422>

Available at: <https://scholarworks.umass.edu/jhfm/vol29/iss1/2>

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Impacts of COVID-19 on the U.S. Restaurant Industry from the Global Perspective

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ABSTRACT

The current study explores the impact of COVID-19 on the U.S. restaurant industry in terms of its stock performance, and further incorporates a global perspective into this examination by testing both the main and moderating effects of non-U.S. COVID-19 and also the moderating effect of the internationalization strategy of the U.S. restaurant industry. Findings of this study confirm that U.S. COVID-19 had a negative influence on U.S. restaurant firms' stock returns while non-U.S. COVID-19 had a positive impact. Further, the non-U.S. COVID-19 had a positive moderating effect on the relationship between U.S. COVID-19 and restaurant firms' stock returns. Unexpectedly, the study finds that U.S. restaurant firms' internationalization strategy does not moderate the negative impact of U.S. COVID-19 on restaurants' stock performance. Practical implications and suggestions for future research are also discussed.

Keywords: COVID-19, non-U.S. COVID-19, internationalization, the restaurant industry

Introduction

COVID-19 has been making unprecedented impacts on the world. The global economy has plummeted, and, critically, the pandemic has wreaked havoc on businesses in the restaurant industry, as governmental strategies to attenuate the chaos of COVID-19—including community lockdowns, travel and mobility restrictions, and stay-at-home orders—have impacted restaurant firms' operation for revenue production (Gursoy & Chi, 2020; Gössling et al., 2020). Amid the pandemic, the restaurant industry has been hit dramatically, losing \$130 billion in revenues between March and October 2020, following mandated closure and reduced operation in the U.S. (National Restaurant Association, 2020). Further, as of December 2020, more than 110,000 restaurant businesses in the United States have been closed long-term or permanently, with resulting reduction in the level of employment and service they provide (National Restaurant Association, 2020; Klein, 2020).

To cope with this pandemic, restaurant companies have been implementing strategies such as initiating

or expanding take-out and delivery options. However, inevitably, countless restaurant employees have been laid off or furloughed because of the unparalleled hardship caused by the pandemic (Kim et al., 2020; Brizek et al., 2021). Given this extreme challenge, it has become critically important to have a better understanding of which factors or strategies provide some resilience for restaurant companies. Considering that the pandemic is global, and internationalization has been an essential growth strategy for the restaurant industry in recent decades, it is imperative to investigate the impact of COVID-19 on the restaurant industry from the global perspective. Specifically, the current study attempts to examine the impact not only of domestic COVID-19 (measured by the weekly growth rate of the number of confirmed cases of COVID-19 in the United States), but also of foreign COVID-19 (measured by the weekly growth rate of the number of confirmed cases of COVID-19 in non-U.S. territories) on restaurant companies' performance in the United States. Furthermore, this study explores the moderating role of a restaurant company's internationalization strategy

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(i.e., an internal factor) and non-U.S. COVID-19 (i.e., an external factor) on the relationship between U.S. COVID-19 and performance.

Note that this study views the internationalization strategy as an internal decision and non-U.S. COVID-19 as an external factor. Combined, this study takes a more comprehensive approach in examining the effect of COVID-19 on the restaurant industry. The current study bases its arguments on operational flexibility (Lee & Makhija, 2009) and modern portfolio theory (Lintner, 1965; Sharpe, 1964) regarding the internationalization strategy. Further, this study adopts domestic investors' (i.e., U.S. investors in the present study) *home bias* and *relative optimism* (Strong & Xu, 2003; Solnik & Zuo, 2017) as the basis for the moderating role of non-U.S. COVID-19. Findings of this study demonstrate a negative impact of U.S. COVID-19 and an insignificant impact of non-U.S. COVID-19 on restaurant companies' stock returns. Furthermore, this study found that non-U.S. COVID-19 positively moderates the negative effect of U.S. COVID-19 on restaurant companies' stock returns, while the internationalization strategy does not appear to have a significant moderating effect.

The next section reviews the relevant literature and develops hypotheses. After that, methodology is presented, including data and the statistical estimation method, followed by results and discussions. Limitations and suggested future research conclude the study.

Literature Review

Internationalization

Internationalization is defined as a firm level strategy in which a firm has operations in various markets simultaneously that are in different countries/regions (Barney & Hesterly, 2010). Previous literature has been rooted mainly in internalization theory and the resource-based view to explain such things as the benefits and costs of internationalization (Buckley & Strange, 2011; Chang & Wang, 2007). From the resource-based view (Barney, 1991), internationally diversified firms may use their internationalized operations as an effective strategy to obtain competitive advantage by aligning

existing resources and capabilities and having them interact through diverse business outlets in differing geographical regions (Barringer & Harrison, 2000; Eng, 2005). On the other hand, the knowledge and skillsets generated within firms are deeply rooted in themselves and are hard to transfer to other firms (Nelson & Winter, 1982); many contractual issues may arise if firms attempt to transfer knowledge and skillsets to others (Wernerfelt, 1988). To overcome this problem, a firm can develop an internationalization strategy which can give it access to necessary knowledge and skillsets in various locations in the world.

From the perspective of internalization theory (Buckley & Casson, 1976), an internationally diversified firm can become more efficient from internal knowledge developed through diverse bundles of activities in different geographical markets. In other words, such internationally diversified firms can take advantage of the internalized labor by accumulating knowledge and skills within the firm (Nickerson & Zenger, 2008). Moreover, they can obtain internal capital as more cash flows, coming in from multiple outlets (Khanna & Palepu, 1999). Both labor and capital accumulation can yield higher efficiency in resource allocation, which can generate a higher return on their investments via a more efficient mix of assets.

While the two theories discussed above have been widely accepted in the previous literature and explain much about a firm's internationalization strategy, the current study adopts the modern portfolio theory as the main theory to explain the effect of internationalization during COVID-19 due to its central concept of risk and return. Markowitz (1952) proposed the modern portfolio theory that demonstrated the effectiveness of diversification in the investment portfolio. In essence, more diversified investment portfolios would provide less risk to investors with a given return, thus preferred by investors. Through Lintner (1965) and Sharpe (1964), the idea of the modern portfolio became more established, and the theory later extended to the context of the internationalization under the general realm of diversification. According to the theory, a firm with an internationalization strategy can reduce risks with more diversified operations, which can apply to the context of COVID-19.

Compared to other industries (e.g., manufacturing), the restaurant industry has its own unique characteristics in terms of internationalization strategy that may require special attention. Firstly, based on the findings from meta-analysis conducted by Bausch and Krist (2007), the positive impact of research and development (R&D) becomes greater as a firm diversifies more geographically. In particular, a higher level of R&D can ensure a firm smoothly exploits and transfers resources and knowledge through various geographical regions to generate competitive advantage. Given the lower level of R&D of restaurant firms, the positive effect of geographic diversification may not be as salient as that of other industries with higher level of R&D. Secondly, contrary to manufacturing firms, restaurant firms endure higher initial costs in the internationalization process, given the simultaneity of production and consumption (Capar & Kotabe, 2003; Contractor et al., 2003). In other words, hospitality firms need to restructure or replicate an entire value chain for each international outlet in order to deliver their products and services. Such a process not only requires a higher level of initial capital investment, but it also may delay, due to a longer process, the positive effects from internationalization, which include better resource alignment and closer internal relationships among internationally diversified outlets.

Nevertheless, some special characteristics of restaurant firms may actually stimulate benefits from internationalization, compared to other industries. Firstly, restaurant firms hinge their operations heavily on external environments (e.g., natural environment and legislative environment) of specific regions (Jolliffe & Farnsworth, 2003; Singh & Schmidgall, 2002). Thus, compared to other industries, they may obtain more benefits by having a portfolio effect with international outlets that tend to lower a firm's overall risks. Secondly, restaurant firms have experienced a greater level of fragmentation and rivalry in their competition (Jung et al., 2016; Olsen & Roper, 1998). Therefore, market power advantage, which can be acquired from international market operations, is essential to restaurant firms achieving lower risk and thus better returns over competitors. The market power advantage can help such international firms to establish a dominant position in the market

by giving a greater level of bargaining power over their competitors (Barney & Hesterly, 2010).

Internationalization and Firm Performance

Research on the relationship between internationalization and firm performance shows inconclusive findings. Some studies suggest a positive impact of internationalization on firm performance (e.g., Chang & Wang, 2007; Grant, 1987), whereas other studies have found a negative impact of internationalization on firm performance (e.g., Denis et al., 2002; Saudagaren, 2002). Moreover, some studies have proposed a nonlinear relationship between internationalization and firm performance (e.g., Hitt et al., 1997; Lu & Beamish, 2004). Therefore, in order to have a deeper understanding of the aforementioned inconclusiveness of the effect of internationalization on firm performance, Bausch and Krist (2007) employed a meta-analysis approach with a sample of 36 studies. The results revealed that there are other factors that also influence the relationship between internationalization and firm performance. Such factors include firm characteristics (e.g., firm size, firm age, and country of origin) and the level of other aspects of diversification (e.g., product diversification). These findings suggest that the inconclusive relationship between internationalization and firm performance may result from neglecting firm-specific characteristics.

Hypothesis Development

The COVID-19 pandemic, as a public health risk, has significantly influenced individual and corporate behaviors. Restaurant firms, as labor-intensive firms with multiple service touchpoints, must address stakeholders' concerns during this pandemic. A hard hit on the restaurant industry is, in fact, no surprise, considering the dramatic decline in indoor dining during the pandemic, often restricted or even prohibited by the government (National Restaurant Association, 2020). Consequently, a negative impact of the pandemic on firms' stock performance is well expected and has been empirically suggested for the restaurant industry (Song et al., 2021). Therefore, the current study first hypothesizes a negative effect of domestic COVID-19 (hereafter, USCOVID-19)

on restaurant firms' stock performance. This study measures the degree of COVID-19 by the weekly growth rate of the number of confirmed cases in the United States and expects to find a negative relationship between the degree of COVID-19 in the United States and restaurant firms' stock returns. Accordingly, the first hypothesis is presented as follows:

Hypothesis 1: USCOVID-19 negatively impacts the U.S. restaurant firms' stock returns.

For U.S. restaurant firms, USCOVID-19 is certainly expected to influence their operations and thus performance in a direct and significant manner, as proposed in Hypothesis 1. However, we now live in a globalized and connected world, thus it would be interesting to see how the non-U.S. case of COVID-19 (hereafter, non-USCOVID-19) impacts domestic (i.e., U.S.) restaurant firms' operations and performance. This study applies a psychological perspective in addition to the possibility of a shift in market demand to explain how financial markets may react to non-USCOVID-19. Firstly, when the situation of COVID-19 in foreign countries becomes worse in general, U.S. investors will likely withdraw their investments from foreign markets and focus more on domestic companies. Further, this investment shift may become even more pronounced and significant, possibly due to U.S. investors' psychological perceptions, known as *home bias* and *relative optimism* (Strong & Xu, 2003; Solnik & Zuo, 2017). Investors have demonstrated stronger favor for domestic rather than foreign assets, known as *home bias*, and they have also shown some tendency to be more optimistic about their domestic markets than foreign markets, known as *relative optimism*. These two particular aspects toward the domestic market would likely even accelerate U.S. investors' favoring domestic assets generated by worsening situations of COVID-19 in foreign countries. Therefore, this study proposes the following hypothesis:

Hypothesis 2: Non-USCOVID-19 positively impacts U.S. restaurant firms' stock returns.

Moreover, the current study argues that U.S. restaurant firms with more international operations would be more likely to alleviate the negative effect

of USCOVID-19 on their stock performance. It is mainly because of operational flexibility (Lee & Makhija, 2009) and the diversification effect based on modern portfolio theory (Lintner, 1965; Sharpe, 1964), both achieved by the internationalization strategy. In other words, when the COVID-19 pandemic impacts U.S. restaurant firms' home country severely, the internationalization strategy (i.e., an internal decision) can mitigate such negative impact by bringing in cash flows from internationally operated properties, where the impacts of the COVID-19 pandemic are not as strong. Therefore, the following hypothesis is proposed:

Hypothesis 3: Internationalization strategy positively moderates the relationship between USCOVID-19 and U.S. restaurant firms' stock returns.

Lastly, this study considers non-USCOVID-19 as a second moderator (i.e., an external factor) that would also ease the negative effect of USCOVID-19 on U.S. restaurant firms' stock performance. The arguments for this moderating role of non-USCOVID-19 stems from the same arguments of the main effect of non-USCOVID-19 on U.S. restaurant firms' stock returns. Basically, given the likelihood of U.S. investors' disengagement from foreign financial markets due to the increasing severity of COVID-19 in foreign countries and moreover, their psychological tendencies (*home bias* and *relative optimism*) (Strong & Xu, 2003; Solnik & Zuo, 2017), which would favor domestic financial markets (i.e., U.S. markets) over foreign markets, this would have not only a direct (i.e., main) effect on U.S. restaurant firms' stock performance, but also an indirect (i.e., moderating) effect on the relationship between USCOVID-19 and firm performance. Specifically, investors' favoritism toward U.S. companies in general will alleviate the expected negative impact of USCOVID-19 on U.S. restaurant firms' stock returns. Accordingly, the following hypothesis is proposed:

Hypothesis 4: Non-USCOVID-19 positively moderates the relationship between USCOVID-19 and U.S. restaurant firms' stock returns.

Methodology

Data

The sample of the current study consists of publicly traded U.S. restaurant firms, including full-service restaurants (NAICS 722511) and limited-service restaurants (NAICS 722513), following the North American Industry Classification System (NAICS). To examine the effect of COVID-19 on stock returns of U.S. restaurant firms in global business settings, this study set up the sample period from January 3 to September 25, 2020. The rationale for this sample period was that although COVID-19 first emerged in December 2019 in Wuhan, China, the pandemic diffused rapidly and extensively to other countries from the beginning of 2020, including the United States, South Korea, and European countries. Furthermore, the World Health Organization (WHO) designated COVID-19 as a public health emergency of international concern on January 30 and as a global pandemic on March 11. As of late August, the number of global confirmed cases was over 25 million, of which, approximately 6 million confirmed cases occurred in the United States, which was the largest number of confirmed cases all over the world (World Health Organization, 2020). Considering that COVID-19 is not a transitory but a prolonged and long-term global shock, the current study selected the sample period to be as extensive as possible to incorporate accumulated influences of COVID-19 on the U.S. restaurant stock market.

Four major sources were utilized to obtain data for analyses: 1) the Center for Systems Science and Engineering (CSSE) dashboard and WHO website to retrieve the number of COVID-19 global confirmed cases; 2) Yahoo Finance to retrieve firm-level stock returns of U.S. restaurant firms, and 3) a firm's annual reports (10-Ks) in SEC to retrieve firm-level characteristics, including information on the degree of internationalization and other control variables (e.g., size, leverage, and ROA).

To measure sampled U.S. restaurant firms' pre-pandemic characteristic of internationalization (our main interest), and other firm-specific characteristics as control variables, the current study employed the average measure over the past three-year period from 2017 to 2019, which was generally crisis-less and stable, obtained from annual reports (10-Ks)

(Song et al., 2021). This is because shareholders of a firm and other investors are likely to refer to mid-term or long-term past characteristics and organizational outcomes of a firm when making crucial decisions, such as investing and selling stocks, rather than counting on relatively short-term data (e.g., one-year corporate information) (Hendricks & Singhal, 2001). After eliminating observations with missing values, this study obtained 975 firm-week observations for analyses.

Model and Estimation Method

To investigate the moderating effect of internationalization and non-U.S. COVID-19 on the impact of USCOVID-19 on stock returns in the U.S. restaurant industry, the current study proposed research models as follows:

Model 1:

$$\begin{aligned} \text{RETURNS}_{it} = & \alpha_0 + \alpha_1 \text{USCOVID}_t \\ & + \alpha_2 \text{NON-USCOVID}_t + \alpha_3 \text{INT}_{i, \text{pre-COVID}} \\ & + \alpha_4 \text{USCOVID}_t \times \text{INT}_{i, \text{pre-COVID}} + \alpha_5 \text{SIZE}_{i, \text{pre-COVID}} \\ & + \alpha_6 \text{LEV}_{i, \text{pre-COVID}} + \alpha_7 \text{ROA}_{i, \text{pre-COVID}} \\ & + \alpha_8 \text{MTB}_{i, \text{pre-COVID}} + \alpha_9 \text{FR}_{i, \text{pre-COVID}} + \alpha_{10} \text{WEEK}_t \\ & + \alpha_{11} \text{SINDEX}_t + \alpha_{12} \text{FISCAL}_1t + \alpha_{13} \text{FISCAL}_2t \\ & + \alpha_{14} \text{CB}_1t + \alpha_{15} \text{CB}_2t + \alpha_{16} \text{America}_{i, \text{pre-COVID}} \\ & + \alpha_{17} \text{Africa}_{i, \text{pre-COVID}} + \alpha_{18} \text{Europe}_{i, \text{pre-COVID}} \\ & + \alpha_{19} \text{Asia}_{i, \text{pre-COVID}} + \varepsilon_{it}; \end{aligned}$$

Model 2:

$$\begin{aligned} \text{RETURNS}_{it} = & \alpha_0 + \alpha_1 \text{USCOVID}_t \\ & + \alpha_2 \text{NON-USCOVID}_t + \alpha_3 \text{USCOVID}_t \\ & \times \text{NON-USCOVID}_t + \alpha_4 \text{INT}_{i, \text{pre-COVID}} \\ & + \alpha_5 \text{SIZE}_{i, \text{pre-COVID}} + \alpha_6 \text{LEV}_{i, \text{pre-COVID}} \\ & + \alpha_7 \text{ROA}_{i, \text{pre-COVID}} + \alpha_8 \text{MTB}_{i, \text{pre-COVID}} \\ & + \alpha_9 \text{FR}_{i, \text{pre-COVID}} + \alpha_{10} \text{WEEK}_t + \alpha_{11} \text{SINDEX}_t \\ & + \alpha_{12} \text{FISCAL}_1t + \alpha_{13} \text{FISCAL}_2t + \alpha_{14} \text{CB}_1t \\ & + \alpha_{15} \text{CB}_2t + \alpha_{16} \text{America}_{i, \text{pre-COVID}} \\ & + \alpha_{17} \text{Africa}_{i, \text{pre-COVID}} + \alpha_{18} \text{Europe}_{i, \text{pre-COVID}} \\ & + \alpha_{19} \text{Asia}_{i, \text{pre-COVID}} + \varepsilon_{it}; \end{aligned}$$

where RETURNS represents the weekly stock returns of a restaurant firm; USCOVID represents the weekly growth rate of the number of confirmed U.S. COVID-19 cases; NON-USCOVID represents the weekly growth rate of the number of confirmed non-U.S. COVID-19 cases; INT represents the degree of internationalization; SIZE represents

firm size; LEV represents debt-to-equity ratio; ROA represents a restaurant firm's past accounting performance; MTB represents a restaurant firm's market-to-book ratio; FR represents the degree of franchising; WEEK represents the number of weeks from the initial date of COVID-19 confirmation in the United States; SINDEK represents the Government Response Stringency Index which tracks travel restriction, trade patterns, school openings, social distancing, and other such measures of the United States; FISCAL_1 represents a dummy variable, assigning 1 for a week containing the first fiscal stimuli on March 6 and 0 otherwise; FISCAL_2 represents a dummy variable, assigning 1 for a week containing the second fiscal stimuli from March 25 to 27 and 0 otherwise; CB_1 represents a dummy variable, assigning 1 for a week containing the first circuit breaker on March 9 and 0 otherwise; CB_2 represents a dummy variable, assigning 1 for a week containing the second circuit breaker on March 16 and 0 otherwise; America represents the number of properties in both North and South American countries divided by the number of total properties; Africa represents the number of properties in African countries divided by the number of total properties; Europe represents the number of properties in European countries divided by the number of total properties; Asia represents the number of properties in Asian countries divided by the number of total properties.

For coefficients estimation, this study used generalized estimating equations (GEE), which has been employed extensively in the strategic management and finance literature when examining organizational outcomes with panel data (Henderson et al., 2006; Hilbe & Hardin, 2008). More specifically, GEE addresses non-independent observations that may possibly cause high correlations among repeated measures in panel data, which allows us to derive maximum likelihood estimates (Ghisletta & Spini, 2004; Liang & Zeger, 1986). Given that values of multiple independent variables, particularly pre-COVID firm-level characteristics (e.g., INT, SIZE, and ROA), are invariant over the sample period within a firm, the adoption of GEE seems justifiable over other panel analyses such as a fixed-effects model. Additionally, this study utilized robust standard errors, regarded as heteroscedasticity- and autocorrelation-consistent standard errors, to

mitigate within-cluster correlations and possible deflated standard errors in panel data (Gujarati, 2009).

Dependent Variable

During the sample period from January 3 to September 25, the current study obtained each U.S. restaurant firm's weekly stock price from Yahoo Finance (finance.yahoo.com) to calculate weekly stock returns. After retrieving dividend-adjusted closing prices on the last trading day of a week, the stock returns were calculated by a difference between a closing price on week_t and week_{t-1}, divided by the closing price on week_{t-1} (Ramelli & Wagner, 2020).

Main Variables

U.S. COVID-19 and Non-U.S. COVID-19

The number of confirmed cases of the U.S. and non-U.S. were mainly collected from the COVID-19 dashboard of the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU) and the WHO website (covid19.who.int). The CSSE database has been frequently utilized in the literature and media, since the database tracks confirmed cases of COVID-19 in real time (Ding et al., 2020; Ramelli & Wagner, 2020). However, considering that the database provides COVID-19 data since January 22, 2020, the current study supplemented the previous period's data from the WHO website. We calculated weekly growth rates of both U.S. COVID-19 and non-U.S. COVID-19, measured by a difference between accumulated confirmed cases in week_t and that in week_{t-1}, divided by the confirmed cases in week_{t-1}. In addition, to match weekly growth rates of COVID-19 with the sampled restaurant firms' weekly stock returns, the current study set up a week from Saturday to Friday, because the last trading day of a week in the U.S. stock market is normally Friday (Ding et al., 2020).

Internationalization

To measure the degree of internationalization of a restaurant firm, this study employed the Berry-Herfindahl index ($1 - \sum S_i^2$), recognized as an appropriate measurement in the internationalization and market expansion literature, in that the index considers both the number and the weight of properties

of an organization (Denis et al., 2002; Song et al., 2021). Specifically, S_i indicates the number of properties in each country (i) divided by the number of total properties. The more a restaurant firm expands its operations into various foreign markets, the more the Berry-Herfindahl index approaches 1, while the index is 0 when a firm operates its businesses solely on a domestic level (Kang & Lee, 2014).

Control Variables

To control for firm-level pre-pandemic characteristics which may confound the impact of COVID-19 on stock returns, the current study included five control variables. As mentioned above in the Data section, all firm-level characteristics were calculated by averaging 3-year values from 2017 to 2019. Firstly, firm size (SIZE), measured by the log of total assets, was included since a firm's size influences economies of scale and market power advantage, thereby affecting financial performance (Carter et al., 2003). Next, a firm's leverage (LEV) was considered, because leverage acts as a key indicator of a firm's liquidity, which influences financial performance (Brealey & Myers, 2003; Korteweg, 2004). ROA, measured by return on total assets, was included in our models since past profitability plays a crucial role for investors in making investment decisions, which influences stock returns (Allozi & Obeidat, 2016). Also, this study controlled for a firm's market-to-book ratio (MTB) given that past MTB indicates a firm's stock liquidity and growth opportunities, functioning as a significant indicator for predicting market values (Fang et al., 2009; Allozi & Obeidat, 2016). The degree of franchising (FR) was also incorporated into our models since franchising is a key corporate strategy of restaurant firms in the restaurant industry, which may confound the relationship between COVID-19 and stock returns (Park & Lee, 2009).

In addition to firm-level characteristics, this study controlled for possible confounding effects that may occur by a change in anxiety level of the severity of COVID-19, policy changes, and other governmental interventions responding to COVID-19. First, previous studies which examined the impact of COVID-19 on stock markets in non-hospitality industry contexts (e.g., Alfaro et al., 2020; Papadamos et al., 2020) found that a negative market

reaction was the strongest in the early stage (e.g., in the first 60 days) and the stock declines were alleviated over time. These studies provided as a probable explanation that the anxiety levels of investors regarding pandemics may decrease as time goes on. To control for the confounding effect of time on the impact of COVID-19 on stock returns, WEEK measured by the number of weeks from the initial date of COVID-19 detection in the U.S. was included in our models. Secondly, a country-level index known as "the Government Response Stringency Index" (SINDEX), developed at Oxford University, was included to control governmental policies' impact on stock markets. The SINDEX is a composite index, calculated by incorporating nine indicators (e.g., travel restriction, school openings, social distancing, trade patterns, and others) and rescaling a value from 0 to 100 (Alfaro et al., 2020; Balajee et al., 2020). Next, the current study included U.S. governmental fiscal stimuli responding to COVID-19 by putting two dummy variables into our models; FISCAL_1 assigns 1 for a week (t) containing a day in which the government signed and announced the first fiscal stimulus (i.e., March 6), and 0 otherwise; FISCAL_2 assigns 1 for a week (t) containing days in which the government signed and announced the second stimulus (i.e., from March 25 to March 27), and 0 otherwise. In addition, "Circuit Breaker" (CB), which is a governmental intervention to limit investors' panic selling by temporarily halting trading, could lessen the negative impact of COVID-19 on stock markets. Thus, the current study included two dummy variables to control for CB; CB_1 assigns 1 when a week (t) contains a day of the first circuit breaker on March 13 and 0 otherwise; CB_2 assigns 1 when a week (t) contains a day of the second circuit breaker on March 20.

Furthermore, although COVID-19 is a global pandemic that negatively impacts countries' market conditions all over the world, pace and severity may differ vastly, depending on continents. For example, while Asian countries including China and South Korea and European countries including Italy, Spain, and France were damaged by the pandemic relatively earlier at the initial stage, since March 2020, situations of COVID-19 in North and South American countries and African countries have become relatively worse. In that regard, as restaurant firms have different internationalization portfolios, the

different pace and severity of COVID-19, contingent on each continent, may affect stock returns of a restaurant firm. To control for differing continental impacts, this study included four continent variables. As Oceania was selected as a reference group to avoid a perfect collinearity problem, the other four continent variables were measured by properties in a specific continent divided by the total properties of restaurant firms.

Results

Descriptive Statistics

Table 1 presents the results of descriptive statistics of variables included in research models, employing 975 firm-year observations of the U.S. restaurant firms. RETURNS, a dependent variable, had a mean of -0.003 , ranging from -0.533 to 0.490 . In other words, during the sample period, on average, RETURNS showed a marginal decrease, -0.3% , with the worst as a decline of 53.3% and the best as an increase of 49.0% . USCOVID showed that a mean of a weekly growth rate of confirmed cases in the United States was 40.4% on average with a standard deviation of 58.3% . Similarly, NON-USCOVID showed an average weekly growth rate of 41.9% with a standard deviation of 65.8% . All firm-level pre-pandemic characteristics showed sufficient variation for conducting regression analyses.

For example, SIZE had a mean of 5.944 , ranging from 1.903 to 8.831 . And MTB had a mean of 2.164 with a standard deviation of 7.975 . A time effect (WEEK) showed a range from 1 to 39 , as we contained 39 weeks as our sample period. The Government Response Stringency Index (SINDEX) had a mean value of 51.818 , from 0.000 to 72.690 over the sample period. And dummy variables including FISCAL_1, FISCAL_2, CB_1, and CB_2 reported the same values of a mean and a standard deviation along with the same range. Pertaining to four continent variables, America had the largest mean value compared to other continents, since the U.S. restaurant firms' businesses are mainly concentrated in American countries. Asia showed the second largest mean value of 2.5% and Europe and Africa followed.

The results of Pearson's correlations among variables were reported in Table 2. As expected, RETURNS had a negative correlation with USCOVID at a 1% significance level, whereas NON-USCOVID showed an insignificant association with RETURNS. And surprisingly, there were insignificant associations between RETURNS and firm-level pre-pandemic characteristics, including INT, SIZE, LEV, ROA, MTB, and FR. A possible explanation is that there may be multiple unobservable variables which influence both RETURNS and pre-pandemic firm-level characteristics, which were not considered in these bivariate relationships. WEEK is positively associated with RETURNS at a 5%

Table 1. Summary of Descriptive Statistics

Variables	N	Mean	Std. Dev	Min	Max
RETURNS	975	-0.003	0.103	-0.533	0.490
USCOVID	975	0.404	0.583	0.000	2.484
NON-USCOVID	975	0.419	0.658	0.000	2.760
INT	975	0.088	0.171	0.000	0.618
SIZE	975	5.944	1.505	1.903	8.831
LEV	975	1.021	4.633	-4.087	22.531
ROA	975	0.048	0.065	-0.082	0.169
MTB	975	2.164	7.974	-14.665	32.602
FR	975	0.260	0.335	0.000	0.978
WEEK	975	20.000	11.260	1.000	39.000
SINDEX	975	51.818	28.902	0.000	72.690
FISCAL_1	975	0.026	0.158	0.000	1.000
FISCAL_2	975	0.026	0.158	0.000	1.000
CB_1	975	0.026	0.158	0.000	1.000
CB_2	975	0.026	0.158	0.000	1.000
America	975	0.965	0.085	0.654	1.000
Africa	975	0.0005	0.002	0.000	0.011
Europe	975	0.009	0.028	0.000	0.125
Asia	975	0.025	0.063	0.000	0.285

Table 2. Summary of Pearson's Correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
RETURNS	1.000									
USCOVID	-0.226***	1.000								
NON-USCOVID	0.004	0.305***	1.000							
INT	0.019	-0.000	-0.000	1.000						
SIZE	0.052	0.000	-0.000	0.174***	1.000					
LEV	0.004	0.000	0.000	0.101***	0.303***	1.000				
ROA	0.004	-0.000	0.000	0.176***	0.330***	-0.171***	1.000			
MTB	-0.009	0.000	0.000	0.045	0.331***	0.904***	-0.258***	1.000		
FR	0.039	-0.000	-0.000	0.522***	0.099***	-0.252***	0.466***	-0.479***	1.000	
WEEK	0.069**	-0.467***	-0.585***	-0.000	-0.000	-0.000	-0.000	-0.000	0.000	1.000
SINDEX	0.100***	-0.189***	-0.614***	0.000	0.000	-0.000	0.000	-0.000	-0.000	0.741***
FISCAL_1	-0.128***	0.216***	-0.058	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.144***
FISCAL_2	0.014	0.306***	0.049	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.101***
CB_1	-0.264***	0.378***	-0.024	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.130***
CB_2	-0.141***	0.580***	0.037	-0.000	-0.000	0.000	-0.000	0.000	-0.000	-0.115***
America	-0.017	-0.000	0.000	-0.951***	-0.152***	-0.007	-0.024	-0.038	-0.390***	-0.000
Africa	0.021	0.000	0.000	0.635***	0.065	-0.225***	0.052	-0.274***	0.375***	0.000
Europe	0.018	-0.000	0.000	0.807***	0.133***	-0.220***	-0.007	-0.214***	0.409***	0.000
Asia	0.015	-0.000	-0.000	0.907***	0.140***	0.100***	0.030	0.146***	0.331***	0.000
Variables	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
RETURNS										
USCOVID										
NON-USCOVID										
INT										
SIZE										
LEV										
ROA										
MTB										
FR										
WEEK										
SINDEX	1.000									
FISCAL_1	-0.177***	1.000								
FISCAL_2	0.117***	-0.026	1.000							
CB_1	-0.122***	-0.026	-0.026	1.000						
CB_2	0.086***	-0.026	-0.026	-0.026	1.000					
America	0.000	0.000	0.000	0.000	0.000	1.000				
Africa	0.000	0.000	0.000	0.000	0.000	-0.578***	1.000			
Europe	-0.000	-0.000	-0.000	-0.000	-0.000	-0.839***	0.849***	1.000		
Asia	0.000	0.000	0.000	0.000	0.000	-0.966***	0.376***	0.669***	1.000	

Note: *** $p < 0.01$, ** $p < 0.05$

significance level. Further, regarding governmental policies and interventions reacting to COVID-19, it showed significant relationships with RETURNS although the direction of the relationships differed, depending on each variable. For example, while SINDEX and FISCAL_2 showed a positive association with RETURNS, FISCAL_1, CB_1, and CB_2 were negatively correlated with RETURNS. Regarding continent effects, measured by the number of each restaurant firm's properties in a specific continent divided by the total number of properties, it showed no significant association with RETURNS. Additionally, both USCOVID and NON-USCOVID showed a negative relationship with WEEK, which measured time effects in terms of investors' anxiety

level of COVID-19. And, USCOVID has a negative association with SINDEX, while FISCAL_1, FISCAL_2, CB_1, and CB_2 were positively correlated with USCOVID.

Main Analyses

Table 3 reports the results of main analyses in terms of the moderating roles of INT and NON-USCOVID. According to the first column, without having interaction terms, USCOVID appears to have a negative impact on RETURNS. The result indicates that, on average, 1% increase in USCOVID results in 0.012% decrease in RETURNS when other things were held constant. Whereas NON-USCOVID showed

Table 3. *Results of the Main Analyses*

VARIABLES	(1) RETURNS	(2) RETURNS	(4) RETURNS
US COVID	−0.012*** (0.004)	−0.015** (0.007)	−0.036*** (0.010)
NON-US COVID	0.009*** (0.003)	0.009*** (0.003)	0.001 (0.003)
INT	−0.0005 (0.047)	−0.0144 (0.0498)	−0.0005 (0.047)
US COVID x INT		0.0344 (0.0463)	
US COVID x NON-US COVID			0.016*** (0.005)
SIZE	0.005** (0.003)	0.005** (0.003)	0.005** (0.003)
LEV	0.002** (0.0009)	0.002** (0.0009)	0.002** (0.0009)
ROA	−0.069 (0.040)	−0.069 (0.040)	−0.069 (0.040)
MTB	−0.001** (0.0005)	−0.001** (0.0005)	−0.001** (0.0005)
FR	0.015 (0.008)	0.015 (0.008)	0.015 (0.008)
WEEK	−0.001*** (0.0003)	−0.001*** (0.0003)	−0.001*** (0.0003)
SINDEX	0.0007*** (0.0002)	0.0007*** (0.0002)	0.0007*** (0.0002)
Fiscal_1	−0.070*** (0.014)	−0.070*** (0.014)	−0.051*** (0.016)
Fiscal_2	−0.011 (0.027)	−0.011 (0.027)	0.006 (0.027)
CB_1	−0.156*** (0.028)	−0.156*** (0.028)	−0.128*** (0.029)
CB_2	−0.095*** (0.035)	−0.095*** (0.035)	−0.062 (0.040)
America	4.693*** (1.315)	4.693*** (1.315)	4.693*** (1.315)
Africa	6.988*** (1.738)	6.988*** (1.738)	6.988*** (1.738)
Europe	4.392*** (1.314)	4.392*** (1.314)	4.392*** (1.314)
Asia	4.751*** (1.340)	4.751*** (1.340)	4.751*** (1.340)
Constant	−4.726*** (1.323)	−4.725*** (1.323)	−4.717*** (1.324)
Wald chi2	1705.93***	2139.58***	2935.11***
Observations	975	975	975

Note: Robust standard errors in parentheses; *** $p < 0.01$, ** $p < 0.05$

a positive impact on RETURNS of restaurant firms (p-value is less than 0.01). Surprisingly, regarding the moderating effect of INT, an interaction term (USCOVID x INT) showed an insignificant impact on RETURNS. That is, a restaurant firm's

internationalization prior to the COVID-19 shock insignificantly alleviated stock declines in accordance with COVID-19.

In our next model, in the third column examining the moderating impact of NON-USCOVID, an

interaction term (USCOVID x NON-USCOVID) had a positive effect on RETURNS at a 1% significance level. That is, in global business situations of restaurant firms, NON-USCOVID positively moderates the relationship between USCOVID and RETURNS, lessening the stock declines that occurred by USCOVID. For control variables, while SIZE, LEV, SINDEK, and four continent variables had a positive impact on RETURNS, variables including WEEK, FISCAL_1, CB_1, and CB_2 negatively affected RETURNS.

Discussion and Suggestions for Future Research

The current study explores the impact of COVID-19 on the U.S. restaurant industry in terms of its stock performance, and further incorporates a global perspective into this examination by testing both the main and moderating effects of NON-USCOVID-19 and also the moderating effect of the internationalization strategy of the U.S. restaurant industry. Findings of this study confirm that USCOVID-19 had a negative influence on U.S. restaurant firms' stock returns (supporting Hypothesis 1) while, interestingly, NON-USCOVID-19 had a positive impact (supporting Hypothesis 2). Further, NON-USCOVID-19 had a positive moderating effect on the relationship between USCOVID-19 and restaurant firms' stock returns (supporting Hypothesis 4). Unexpectedly, the study finds that U.S. restaurant firms' internationalization strategy does not moderate the negative impact of USCOVID-19 on restaurants' stock performance (failing to support Hypothesis 3).

Firstly, the finding of the negative impact of USCOVID-19 on restaurant firms' stock returns is not surprising, considering extreme hardships for the restaurant industry caused by the pandemic. In many states, the in-dining service was severely restricted or even prohibited for certain periods. Even when such restrictions or prohibitions were not in place, people became very cautious of dining out at restaurants, which clearly damaged restaurant sales. Further, this finding is consistent with the previous finding on the restaurant industry (Song et al., 2021), confirming the negative impact of USCOVID-19.

Second, the finding of the positive main effect of NON-USCOVID-19 on restaurant firms' stock returns is new, thus adding unique value to the extant hospitality literature. Further, this positive effect of NON-USCOVID-19 extends to the moderation context that alleviates the negative effect of USCOVID-19 on restaurant firms' stock returns. This positive effect as both the main and moderating factors can be explained by investors' psychological tendencies known as *home bias* and *relative optimism*. According to Strong and Xu (2003) and Solnik and Zuo (2017), investors have a psychological tendency to prefer domestic stocks over foreign stocks in general (i.e., *home bias*) along with traits of holding a more optimistic viewpoint toward their domestic markets than toward foreign markets (i.e., *relative optimism*). Our findings suggest that these two psychological tendencies seem to hold even during the COVID-19 pandemic.

Lastly, the insignificant moderating impact of U.S. restaurant firms' internationalization strategy found in the current study is inconsistent with a recent finding of a positive moderating role of the internationalization strategy (Song et al., 2021). While Song et al.'s findings suggested that U.S. restaurant firms' involvement in international operations appeared to help alleviate the negative impact of USCOVID-19 on restaurant firms' stock returns, our findings suggest that the internationalization strategy does not moderate the negative impact of USCOVID-19. The difference in the finding between Song et al. (2021) and the current study may stem from the difference in their measurement for the internationalization strategy. While Song et al. (2021) measured internationalization by dividing the number of foreign units by the number of total units, the current study uses the Berry-Herfindahl index. Clearly, both measures have been used in the previous literature (e.g., Jung et al., 2016; Kang & Lee, 2014; Song et al., 2020), confirming the appropriateness of the measurements. However, the Berry-Herfindahl index has one advantage over the simple degree of international operations in that it represents both the number and the weight of properties of an organization (Denis et al., 2002; Nachum, 2004). Therefore, we can suggest that when the both the number and the weight of foreign properties are considered, U.S. restaurant firms' internationalization strategy may

not be helpful with reducing the negative impact of USCOVID-19 on their stock performance. This insignificant effect may be supported by the transaction cost theory that an increase in costs from coping with all volatile managerial situations related to COVID-19 offsets benefits from international operations, such as operational flexibility and diffusion of operational risk.

Our findings provide some practical implications. Investors who hold restaurant stocks in their investment portfolio should closely monitor not only the domestic condition about a crisis such as COVID-19, but also the foreign condition about the crisis, in creating and modifying their current portfolio to maximize returns. Further, investors and managers of restaurant firms may be cautious in interpreting possible implications of restaurant firms' internationalization strategy during a crisis. As distinct from some other thoughts and findings about the internationalization strategy that may buffer the negative impacts of a crisis, our findings suggest an insignificant moderating role of the strategy.

This study is not free from limitations. Firstly, this study focuses only on COVID-19, thus its findings may not be generalizable to other future crises. When another crisis occurs in the future, scholars may be encouraged to replicate the current study's methodology to confirm or disprove the findings, so that a better understanding of the external validity of the findings can be developed. Further, this study focuses only on the restaurant industry. Therefore, future studies may examine other hospitality firms such as hotels and casinos. Another generalizability limitation of this study concerns how it focuses only on the U.S. setting. Therefore, future studies may apply this study's methodology in the non-U.S. context. In particular, it would be very interesting to see whether or not investors' psychological tendency to favor their domestic stocks through home bias and relative optimism also holds in a non-U.S. context, regarding the impact of the non-domestic condition of a crisis.

Secondly, at the time of this study, the COVID-19 pandemic was not over, but was still ongoing. Therefore, a complete picture of the impact of COVID-19 is not yet available. Future studies may re-examine the hypothesized relationships of this study once the pandemic is over, when the data for the entire

period of COVID-19 becomes available. It would be also interesting to see whether the negative impact of USCOVID-19 on restaurant firms' stock returns hold over the entire pandemic period. Because the U.S. stock market rebounded very solidly during the pandemic, which surprised many investors and analysts, the negative impact of USCOVID-19 over the entire period may possibly disappear. Accordingly, a more in-depth and comprehensive investigation on the impact of USCOVID-19 using the data for the entire pandemic period may be encouraged in the future.

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