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STOCK MARKET VALUATION OF HOTEL FIRMS' SUSTAINABLE INITIATIVES

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ABSTRACT. This study aimed to examine stock price reactions to announcements of Leadership in Energy and Environmental Design (LEED)-certified hotel openings. Using an event study method, the authors analyze news related to 15 hotel openings between the periods of 2009 and 2013. The results show that abnormal returns on stocks are significantly negative after the announcements of LEED-certified hotel openings, suggesting that stock market investors perceive sustainable investments to be value-decreasing projects in the short-term. Practical and theoretical implications are discussed within the framework of the microeconomic theory of pollution abatement.

INTRODUCTION

Corporations in the United States tend to focus on short-term goals to meet Wall Street's expectations (i.e., stock market investors). However, public officials, CEOs, and the academic community have been increasingly criticizing the sole focus of the stock market investors' on short-term goals. The subsequent statement, which is signed by 28 high-profile managers, investors, academics including Warren Buffet, John Bogle, and Louis Gerstner, summarizes the dilemma (Lahart, 2009):

"We believe that short-term objectives have eroded faith in corporations continuing to be the foundation of the American free enterprise system, which has been, in turn, the foundation of our economy."

Unsustainable practices and resulting negative impacts, which is mainly due to the short-term focus of U.S. corporations, have been noticed by environmental groups, policymakers, and the public at large (Chan &

Hawkins, 2010). Therefore, reducing greenhouse gas emission has recently been one of the missions that policymakers in the United States and around the globe aim to accomplish in the near future. For example, U.S. President Barack Obama has introduced an action plan, "The President's Climate Action Plan," that elucidates the necessity of cutting carbon pollution in the United States and undertaking long-term sustainable investments to mitigate the climate change. In particular, the action plan targets to increase energy efficiency by 2030 and underlines the importance of shifting toward clean energy alternatives and reducing the use of fuel oil and coal.

Production and utilization of alternative energy sources, such as solar and wind energy, which are clean and more efficient than traditional energy sources with little or no negative effects on the planet, have been a precedence issue of discussion among policymakers and industry leaders. Although coal mining and petroleum industries are the largest sources of greenhouse gas emissions (IPCC, 2007), negative

effects of service industries to environment have increased as a result of massive energy consumption in these industries. More specifically, the hotel industry is one of the major energy consumers, and it is responsible for the 5% CO₂ gas emission in the world (Scott et al., 2008). Inefficient hotel properties might be the main source of environmental pollution considering the fact that real estates are the major components of investments in the hotel industry. Conventional hotel buildings consume massive energy in terms of the electricity and water, and they also require vast sewage facilities to maintain their daily operations. Unfortunately, these attributes of the hotel business make the industry one of the major contributors to the environment pollution and degradation of ecosystem. The negative effects of hotels on the environment have become a critical issue in the hospitality industry and have captured the public's attention (Kasim, 2004). Therefore, large hotel chains, such as Intercontinental Hotels Group, Marriott, and Starwood, have started to participate, albeit gradually, in the emerging sustainability paradigm by adopting strategies to increase their portfolio of sustainable hotel properties.

One of the most common sustainable investment strategies of hotel firms in the United States is to build new hotels and/or redesign existing hotels according to the U.S. Green Building Council (USGBC) standards. The USGBC recognizes the hotels that comply with its standards as environmentally sustainable by issuing LEED certification. The LEED certification program is a comprehensive rating system that assigns sustainability scores to a structure on the basis of its "greenness," covering all phases of a building's evolution from its design construction, all the way to its maintenance. Although LEED-certified buildings might have shorter payback period, higher operating performance with lower operating costs, and higher operating income, they might require 1–4% higher initial amount of investment (USGBC, 2015). According to a recent report by USGBC, 141 hotels have achieved LEED certification and more than 1,000 hotels have registered to achieve LEED certification in 2013 (USGBC, 2012). By sustainable investments, hotels expect to

receive positive publicity on environmental performance, enhance their reputation, reach environmentally conscious customers, and save costs (Millar & Baloglu, 2011; Sirakaya-Turk, Baloglu, & Mercado, 2014).

Although the relation between environmental performance and economic performance has been studied from a variety of perspectives (e.g., see Feldman, Soyka, & Ameer, 1997; Konar & Cohen, 2001; Yamaguchi, 2008), the stock market's reactions to the LEED-certified hotel openings have not been analyzed. Therefore, this study aimed to examine stock price reactions to announcements of LEED-certified hotel openings.

The pollution abatement hypothesis of microeconomic theory postulates that enhancing environmental performance increases production as well as marginal costs and hence efforts to increase environmental performance decrease marginal benefits (Cebula & Zelenskaya, 2006; Nicholson & Snyder, 2011; Wagner, Schaltegger, & Wehrmeyer, 2001; Wagner, Van Phu, Azomahou, & Wehrmeyer, 2002; Walley & Whitehead, 1994; Wehrmeyer & Tyteca, 1998). Although sustainable investments increase economic performance in the long term, such investments require larger investment amount, which increases the costs in the short term (Renneboog, Ter Horst, & Zhang, 2008). Therefore, sustainable investments, such as LEED-certified buildings, might increase environmental performance at the expense of a decrease in the short-term economic performance. However, this is ultimately an empirical question.

DATA AND METHOD

The standard event study methodology, which is widely used to analyze the effects of economic and financial events on stock performance (see e.g., Chen, Jang, & Kim, 2007; Nicolau, 2002) is used to analyze stock market reactions to LEED-certified hotel openings. First, we identify the announcement date of the LEED-certified hotel openings using Factiva, which is a business information source owned by Dow Jones. We use "LEED

Certified Hotel” as a keyword to search for LEED-certified hotel openings between 2009 and 2013.

We content-analyze the news articles to identify the hotel company and to make sure the news article is about a LEED-certified hotel opening before including the event in our study sample. Second, we use the Center for Research in Security Prices and U.S. Stock Databases to obtain our sample firms’ daily prices and daily market returns. Third, we estimate the hotel stock returns prior to the event date to determine expected returns of the hotel stocks. The expected returns are computed to determine the returns that are isolated from the event effect. Last, we analyze the abnormal returns, which is typically refers to either the positive or negative difference between actual return on investment and the expected return. A positive abnormal return would indicate that investors in the market view that the event, LEED-certified hotel openings in our case, will increase the firm’s future profitability, while a negative abnormal return would suggest that market regards the event to cause a decrease in the firm’s future profitability. Our starting sample consists of all publicly traded hotel stocks in the United States from 2009 to 2013. To be included in the sample, a firm has to have at least one announcement of LEED-certified hotel openings in a news article and its data had to be available on Center for Research in Security Prices U.S. Stock Database. Accordingly, our sample consists of 15 event-firm observations, which is presented in Table 1 on the basis of firms and corresponding event dates.

MEASURING STOCK MARKET REACTIONS

To conduct event study methodology, we analyze daily stock returns, expected returns, and abnormal returns. First, we calculate daily stock returns for the 41-day event period as follows.

$$R_{it} = \frac{P_{it}}{P_{it-1}} - 1 \quad (1)$$

TABLE 1. LEED-Certified Hotel Opening Dates

Event number	Event date	Company
1	02.02.2010	Marriot International Inc.
2	07.23.2010	Marriot International Inc.
3	09.29.2010	Marriot International Inc.
4	08.16.2012	Marriot International Inc.
5	09.06.2012	Marriot International Inc.
6	09.20.2012	Marriot International Inc.
7	09.19.2012	Marriot International Inc.
8	10.26.2009	Intercontinental Hotels Group
9	09.08.2009	Intercontinental Hotels Group
10	04.11.2012	Intercontinental Hotels Group
11	04.04.2011	Starwood Hotels and Restaurants Worldwide Inc.
12	06.10.2011	Starwood Hotels and Restaurants Worldwide Inc.
13	06.27.2012	Starwood Hotels and Restaurants Worldwide Inc.
14	07.26.2012	Starwood Hotels and Restaurants Worldwide Inc.
15	02.07.2012	Hyatt Hotels Corporation

where R_{it} is the actual return on share i on day t , P_{it} is the price for share i on day t , and P_{it-1} is the price of share i on day $t - 1$. To estimate the expected return, for each event, we use the market model. The market model is a simple ordinary least square regression model, hence the parameters are estimated via ordinary least square regression using 231 (– 31 to – 261) trading days daily returns before the event window; note that the sample size is 231 for each event. The model is specified as follows.

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + e_{it} \quad (2)$$

where $E(R_{it})$ is the expected return on share i on day t , R_{mt} is the market return on day t , e_{it} is the random disturbance term, and α_i and β_i are the market model parameters. For each day of the event window, we compute the abnormal returns as the difference between actual return and the expected return, which is the estimated return in the absence of the event, using following equation.

$$AR_{it} = R_{it} - E(R_{it}) \quad (3)$$

where AR_{it} is the abnormal return on share i on day t .

After obtaining abnormal returns, we test whether the abnormal returns are significantly

different from zero. First, we analyze the significance of the abnormal returns over event windows using *t* statistics. Then, we examine whether the abnormal returns are significantly different from zero for the before the event date, for the event date, and for the day after the event date using Boehmer, Musumeci, and Poulsen (1991) test.

RESULTS

The abnormal returns and test statistics over the specified event windows are illustrated in Table 2. According to the results, abnormal returns are significantly different from zero in most of the event windows. More specifically, the abnormal returns are significant for days -20 and 0 , -10 and 0 , 0 and 5 , 0 and 10 , 0 and 20 , and are not significant for days -5 and 0 , -2 and 0 , -1 and 0 , 0 and 1 , and 0 and 2 . We further examine whether the abnormal returns are significantly different from zero using 3, 5, 11, and 21-day windows in addition to 41-day event window.

The test results show that returns are significant for all event windows, with the exception of 3-day event window and stocks yield negative abnormal returns. We also test the significance of daily mean abnormal returns

TABLE 2. Mean Cumulative Abnormal Returns and Test Statistics Over the Event Windows

Event window	Mean cumulative abnormal return	<i>t</i> statistic
(-20, 0)	-0.73	-4.53***
(-10, 0)	-0.72	-2.7**
(-5, 0)	-0.62	-1.6
(-2, 0)	-0.74	-1.37
(-1, 0)	-0.78	-1.22
(0, 1)	-0.56	-0.98
(0, 2)	-0.75	-1.65
(0, 5)	-0.69	-2.2*
(0, 10)	-0.86	-3.83***
(0, 20)	-1.5	-8.55***
(-1, 1)	-0.74	-1.48
(-2, 2)	-0.8	-2.06*
(-5, 5)	-0.67	-2.57*
(-10, 10)	-0.81	-4.52***
(-20, 20)	-1.13	-9.32***

****p* < .001. ***p* < .01. **p* < .05.

for 1 day before and after the event date, and for the each event date.

The results of the tests are displayed in Table 3. According to the Boehmer, Musumeci, and Poulsen test results, abnormal returns are significant for nine of the events on the event date, and 12 of the events on one day before and after event date. Examining events individually gives us ability to see which events receive positive and negative reactions from the market. Accordingly, among 15 events, only four events have significant positive abnormal returns, namely event numbers 6, 7, 12, and 15, while the rest of the events have negative abnormal returns. The results are similar for one day before and after event date.

DISCUSSIONS AND CONCLUSION

The study findings reveal that LEED-certified hotel openings have significant effect on stock prices; however, the impact is found to be negative. Hotel firms' efforts to undertake sustainable investments with a long-term focus, LEED-certified hotel buildings in our case, is seen to be value decreasing projects in the short term. Put differently, hotel stock investors in the United States perceive such investments to be value decreasing in the short term.

TABLE 3. Test Statistics for Daily Mean Abnormal Returns on Days -1 , 0 , and 1

Event number	Day -1 BMP test	Day 0 BMP test	Day 1 BMP test
1	0.10	-0.91	-3.50***
2	-6.10***	-2.20*	-6.23***
3	-3.47***	-1.85	-9.79***
4	-21.11***	-1.57	-7.12***
5	-12.63***	-3.05**	-2.86*
6	2.81*	6.17***	1.25
7	10.49***	2.57*	5.80***
8	-1.27	-4.47***	-2.45*
9	-3.05**	0.56	1.02
10	0.89	1.33	3.11**
11	-3.58***	-17.17***	-27.75***
12	3.19**	10.71***	3.28**
13	-41.94***	-19.04***	-28.55***
14	-120.27***	0.10	-0.20
15	3.48**	3.65***	12.79***

Note. BMP test = Boehmer, Musumeci, and Poulsen test.
****p* < .001. ***p* < .01. **p* < .05.

However, hotel firms have been undertaking sustainable investments, albeit gradually, despite Wall Street's short-term expectations and focus. Relatively higher investment costs of building a new hotel and/or redesigning an existing hotel according to USGBC standards could be one of the reasons of slow adaptation of sustainable practices in the hotel industry. The results contributes to the explanation of the slow adaptation of sustainable practices in the hotel industry that stock market investors view sustainable initiatives undesirable and destructive for the firm in the short term. Furthermore, the findings provide evidence in favor of the traditional microeconomic theory supposition on the pollution abatement that increased environmental performance decreases economic performance as a result of high investment cost (at least in the short term). In the same vein, the results of the study support the concerns that practitioners and academics have raised on the short-term focus of U.S. corporations. Although stock market investors do not seem to value sustainable investments in the short term, the extent to which sustainable investments create or reduce value in the long term is not clear. Therefore, future research is needed to examine whether stock market investors view sustainable investments as value-increasing projects in the long term.

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