Original Research Article

The momentum effect on Taiwanese hotel stocks

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ABSTRACT

By extending the hospitality finance research to the area of behavioral finance, this study examines the momentum effect in the hotel industry. This paper determines whether or not there is a momentum effect on hotel stocks in the Taiwan stock market. The results of empirical tests reveal several unique findings. The momentum factor is found to be a significant determinant of hotel stock returns in Taiwan. Specifically, there is a negative momentum effect in the Taiwanese hotel industry for the short horizon (one month), the medium horizons (three, six and 12 months) and the long horizons (18 and 24 months). Moreover, the negative momentum for the medium (three-, six- and 12-month) horizons is consistent and persistent on different hotel firm performance levels and under different stock market conditions. These empirical findings offer a valuable investment strategy for investors who are interested in hotel stocks.

1. Introduction

According to the Capital Asset Pricing Model (Lintner, 1965; Sharpe, 1964) and the Arbitrage Pricing Theory (Ross, 1976), the total risk of an individual stock or portfolio consists of two types of risk: systematic and unsystematic (or nonsystematic). Systematic risks or market risks are common factors to the whole economy and have market-wide effects. Systematic risks are also called *non-diversifiable risks* because they cannot be avoided by diversification.

Unsystematic risks affect a single asset or a small group of assets or firms. They are known as *unique* or *firm-specific risks* because they are found only in individual companies or assets. Unsystematic risks are also known as *diversifiable risks* because diversification can eliminate them. Thus, when holding a diversified portfolio in which the unsystematic risk is negligible and all of the portfolio risk is systematic, investors require a risk premium as compensation for bearing market risk only. In other words, only systematic risk is a relevant factor in stock pricing.

Based on the rationale that the selection of risk factors could cover systematic influences that would influence dividends and the rate used to discount future cash flows, Chen et al. (1986) used a set of economic variables as systematic risk factors. They found that the growth rate of industrial production, risk structure of interest rates, term structure of interest rates, changes in expected inflation, and changes in unexpected inflation were all significant in explaining U.S. stock returns.

On the one hand, Fama and French (1996) applied an alternative approach to specifying economic factors as candidates for relevant sources of systematic risk. They used firm characteristics to proxy for exposure to systematic risk and proposed a three-factor model. They showed excess market return, size and book-to-market ratio (book value to market value) were three risk factors that could explain U.S. stock returns.

On the other hand, the efficient market hypothesis (EMH) states that stock prices fully and accurately reflect all available information in the market. However, three versions of EMH differ according to their interpretation of the term *all available information* (Fama, 1970). According to weak-form EMH, stock prices already reflect all information contained in the history of past trading. Semi-strong form EMH posits that stock prices already reflect all publicly available information, and strong-form EMH argues that stock prices already reflect all relevant information, including public and inside (or private) information.

Based on EMH, since all stocks are properly priced, abnormal return (stock return in excess of market return) cannot be earned by searching for mispriced stocks, and future stock prices cannot be predicted because they follow a random walk pattern. Therefore, the weak form of the EMH negates the value of technical analysis and the semi-strong EMH negates the value of fundamental analysis. Nonetheless, financial research studies have found some market patterns that can lead to abnormal returns, or *market anomalies*. The findings indeed violate the EMH, particularly the semi-strong EMH, which asserts that investors cannot earn abnormal returns by acquiring all of the available public information on companies and their stocks, and any economic factors that may affect stock prices.

One kind of market anomaly is the momentum effect. In the stock

market, price momentum is the direction and speed (rate) of a stock price trend, either upward or downward. Momentum is the empirically observed tendency for rising stock prices to keep rising, and for falling prices to keep falling, in violation of the EMH. Financial research studies (e.g. Jegadeesh and Titman, 1993, 2001) consider the momentum effect as a phenomenon which stock returns relate to their own lagged cumulative stock returns (or momentum factors).

Indeed, momentum can be considered technical analysis. Bodie et al. (2013) mentioned that technical analysis seeks to disclose trends in market prices. This is indeed a search for momentum. Financial investors search for upward or downward price trends and look to take on a long-short position in stocks. Momentum trading is the application of investment strategies based on the momentum effect in the stock market.

Financial studies explained the findings of the momentum effect based on behavioral finance (e.g., Daniel et al., 1998; Hong and Stein, 1999). Bodie et al. (2013) define behavioral finance as models of financial markets that emphasize potential implications of psychological factor affecting investor behavior. As they noted, the premise of behavioral finance is that conventional financial theory based on the assumption of rational investors and EMH ignores how real people make decisions. While the momentum effect has been well documented in the literature of finance, the existence of a momentum effect in the hospitality industry hasn't been established.

Moreover, several hospitality finance studies related to stock investments have examined the effects of economic factors on hospitality stock returns. The influences of economic variables on hotel stock returns were found to be significant in China (Chen, 2007b), the U.S. (Barrows and Naka, 1994), and Taiwan (Chen et al., 2005). Changes in monetary condition could affect hotel stock performance in Hong Kong (Chen et al., 2010), Japan (Chen et al., 2012), the U.S. (Chen, 2012b, 2012c) and Taiwan (Chen, 2007a, 2013a). Singal (2012) and Chen (2015) revealed that stock returns in the hotel industry were associated with shifts in consumer confidence.

Although previous studies based on these traditional asset pricing models have made diverse contributions to the hospitality finance literature, no hospitality study has yet examined the momentum effect in the hospitality industry. This study makes another contribution to the hospitality literature by extending the hospitality finance research studies to behavioral finance. The investigation of the momentum effect in the hotel sector can advance the knowledge of hospitality finance. The findings are expected to offer valuable investment strategies for those investors who are interested in hotel stocks.

This study examines whether there is a momentum effect on publicly listed hotel stocks in Taiwan. Note that empirical tests of momentum effect are performed by controlling the potential impact of economic factors. The empirical examination consists of three steps. First, this study tests whether there is a momentum effect in the hotel sector. As Jegadeesh and Titman (1993, 2001) and Conrad and Kaul (1998) noted, the horizon is one important factor for the momentum effect. Therefore, the study examines the momentum effects in the Taiwanese hotel industry for the short horizon (one month), medium horizons (three, six, and 12 months) and long horizons (18, 24 and 30 months).

Second, the study analyzes the momentum effect in the hotel sector by dividing hotel firms by performance. Dividing firms by performance can represent the sentiments of individual investors under different firm performing levels (Lee et al., 2012). Note that investors could have different expectations of profits or losses depending on how well or poorly a firm is performing. Consequently, individual stock investors may use different strategies for investments in firms with different performance and the sentiment of individual investors could vary in different hotel firm performance levels, which would lead to different momentum effects.

This study uses quantile regression to test the impact of momentum factors on different quantiles of excess hotel stock returns. Given that

upper, medium and lower quantiles of excess hotel stock returns represent the high-, medium- and low-performing hotel stocks, quantile regression allows us to see how explanatory variables (momentum factors) influence the different quantiles of dependent variable (excess hotel stock returns).

Third, the study tests the momentum effects in the hotel sector under different stock market conditions. While dividing hotel firm performance levels can capture the reaction of individual investor sentiment to different hotel firm performance levels, dividing stock market conditions represents the reaction of aggregate investor sentiment to the hotel sector under different stock market regimes. The momentum effect could depend on the stock market condition (Cooper et al., 2004). Therefore, before examining the momentum effect in different stock market conditions, the study uses the Markov regime-switching model to measure stock market states.

The rest of the paper is organized as follows. Section 2 presents the literature review and all hypotheses. Section 3 describes data and methodology and reports the test results of the momentum effect. Section 4 shows the quantile regression tests of the momentum effect and findings. Tests of the momentum effect under different stock market conditions are reported in Section 5. Section 6 concludes with a discussion of the major findings and the implications for hotel stock investors.

2. Literature and hypotheses

2.1. The effects of economic factors on hospitality stock returns

Hospitality finance researchers have paid attention to the impact of economic variables on hospitality stock returns. Economic variables such as inflation rate, growth rates of money supply and domestic consumption were found to be significant determinants of U.S. restaurant and lodging stock returns (Barrows and Naka, 1994). Chen et al. (2005) showed that changes in the unemployment rate and the growth rates of the money supply were two explanatory factors of hotel stock returns in Taiwan. Chen (2007b) revealed that changes in yield spread, growth rates of imports, industrial production growth rates and lag changes in discount rate could significantly affect the Chinese hotel stock returns.

Unlike Barrows and Naka (1994), Chen et al. (2005) and Chen (2007b) who analyzed the influences of several economic factors on hotel stock returns, Chen (2007a) focused on the effect of changes in monetary policy conditions on hotel stock returns in Taiwan. He used the directional shifts in the discount rate to gauge shifts in monetary condition. Restrictive (expansive) monetary conditions are associated with a directional increase (decrease) in the discount rate. Hotel stock performance was shown to be better in terms of a high mean return and reward-to-risk ratio during periods of monetary expansion.

Similarly, Chen et al. (2010) examined the impact of changes in monetary condition on hospitality stock performance in Hong Kong. Hotel and tourism stocks were found to perform better in expansive monetary environments. Results of regression tests confirmed that changes in discount rate could significantly affect the performance of hotel and tourism stocks.

While changes in monetary policy condition had a significant impact on hospitality stock returns in Taiwan and Hong Kong, Chen (2012b) showed that the impact of monetary policy changes on U.S. hospitality index returns depended on the stage of the business cycle and conditions in the credit market. He found that the effects of changes in monetary condition on U.S. hospitality index returns rely on the state of economy and credit market. In particular, the influences were stronger in business cycle contraction and in a tight credit market.

Singal (2012) and Chen (2015) turned their attention to the effect of consumer confidence or sentiment on hospitality stock returns. Singal (2012) argued that consumer sentiment may significantly impact the hospitality industry because consumers would limit or delay traveling,