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The economy, tourism growth and corporate performance in the Taiwanese hotel industry

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This study investigates the impact of economy and tourism growth on the corporate performance of tourist hotels in Taiwan. The indicators of corporate performance under consideration are occupancy rate (OPR), return on assets (ROA), return on equity (ROE), stock return, and the overall financial performance measured by a comprehensive score (a combined measure of asset management, profitability, short-term solvency or liquidity and long-term solvency based on factor analysis). The effects of changes in the state of economy (real GDP growth rate, ΔGDP) and tourism growth (growth rate of total foreign tourist arrivals, ΔTA) on the corporate performance of tourist hotels are then examined via panel regression tests. Test results show that both ΔGDP and ΔTA are significant explanatory factors of OPR, but only ΔTA can strongly explain ROA and ROE. However, neither ΔGDP nor ΔTA have a significant influence on hotel stock performance. Further, the economic factor (ΔGDP) is slightly more crucial than the industry factor (ΔTA) in describing the overall financial performance in the Taiwanese hotel industry. Empirical findings offer valuable information for government tourism policymakers and tourist hotel owners and managers.

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1. Introduction

The economy is the environment in which all firms operate (Bodie, Kane, & Marcus, 2008). Thus, the prospects of a firm are closely tied to the state of the economy (or economic climate). In other words, changes in corporate performance are closely related to expansion and contraction of the business cycle. Bodie et al. (2008) argued that the economic climate might have a greater impact on profits than the firm's performance within its industry. The corporate performance in the hotel industry may also rely on economic conditions.

The hotel industry is viewed as a cyclical industry, an industry that is highly sensitive to the state of the economy (Bodie et al., 2008). The reason is that the hotel companies tend to have higher fixed costs (costs that all firms incur regardless of their production levels) than variable costs (costs that increase or decrease as the firm produces more or less). With high fixed costs, hotel companies are very sensitive to business conditions because in economic downturns, hotel firms cannot reduce costs as output falls in response to falling sales. Hotel profits will hence swing more widely with sales because costs do not move to offset revenue variability (i.e. small swings in business conditions can have profound effects on profitability of hotels). As Graham and Harris (1999) noted, due to their high fixed costs, hotels require maintaining high revenue to survive and generate adequate profit.

In addition to economic condition, tourism expansion or tourism growth can also have a strong influence on the corporate performance of hotel companies. On the one hand, the expansion of tourism industry or activities directly enhances the development of hotel industry by increasing the occupancy rate and hence sales revenue. On the other hand, tourism development can significantly improve business environment, which has an indirect effect on the corporate performance of hotel firms. Previous empirical studies have supported that tourism expansion can boost economic development (Balaguer & Cantavella-Jorda, 2002; Dritsakis, 2004; Fayissa, Nsiah, & Tadasse, 2008; Gunduz & Hatemi-J, 2005; Kim, Chen, & Jang, 2006; Lee & Chang, 2008; Proenca & Soukiazis, 2008). Chen (2007b) showed that improved economic conditions caused by tourism expansion could raise corporate earnings and strengthen the financial performance of tourism-related firms. In other words, the expansion of tourism is expected to promote the corporate performance of hotel companies.

This study investigates the impact of the state of economy and tourism growth on the corporate performance of tourist hotels in Taiwan. To measure corporate performance, the majority of previous studies used return on assets/return on equity (Athanasoglou, Brissimis, & Delis, 2008) or stock returns (Barro, 1990; Beckers, Grinold, Rudd, & Stefek, 1992; Chen, 2007b; Chen, Kim, & Kim, 2008). The corporate performance in the hotel industry may also rely on economic conditions.

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stated that return on assets (ROA) and return on equity (ROE) indicate the profitability of companies, which may fail to measure the company’s overall performance. Moreover, although stock price has been widely used as an indicator for corporate performance (Chen, 2007b; Heiman, 1988), it might be easily twisted by expectations of irrational investors about future corporate earnings. That is, if investors are not rational, investors’ perceptions about market riskiness will be biased and a firm’s stock price would not reflect the true financial performance.

Specifically, this study makes the following contributions to the tourism literature. First, various indicators of corporate performance are used to test the effects of economic condition and tourism growth on corporate performance in the tourist hotel industry. The indicators of corporate performance under consideration are occupancy rate, ROA, ROE, stock return, and a comprehensive score. The occupancy rate is a common performance measure of sales revenue in the hotel industry. As mentioned, ROA and ROE measure profitability of hotel companies, whereas stock price can evaluate hotel stock performance. In addition, we follow Boubakri, Corset, Fischer, and Guedhami (2005); Kesner (1987), Liu and Hung (2006) and Otchere and Chan (2003) to use several accounting/financial ratios to calculate a comprehensive measure, or score, of corporate performance that can represent the overall financial performance of hotel companies. Six accounting ratios, including debt-equity ratio, total asset turnover, current ratio, quick ratio, ROA, and ROE, are used to calculate a comprehensive score based on factor analysis. The comprehensive score thus combines measures of asset management (total asset turnover), profitability (ROA and ROE), short-term solvency or liquidity (current ratio and quick ratio) and long-term solvency (debt-equity ratio). In consequence, this study enables us to evaluate the impact of economic condition and tourism expansion on the corporate performance of tourist hotels in terms of not only their sales revenue, profitability and stock performance but also the overall financial performance. Empirical findings can provide tourism policymakers and hotel business managers with some practical managerial implications.

Second, this paper considers the possible impact of some unexpected crises related to the hotel and tourism industry into consideration. Some empirical studies reported that events such as the earthquake on 21 September 1999, the terrorist attacks of 11 September 2001 in the US, and the outbreak of Severe Acute Respiratory Syndrome (SARS) in March 2003, significantly damaged financial performance of hotel companies in Taiwan (Chen, Jang, & Kim, 2007; Chen & Kim, in press; Chen et al., 2005). The dummy variables of crisis events are incorporated into test regressions to control for their potential effects on interactions between the corporate performance of hotel firms and the two factors (economy and tourism growth).

Lastly, this study can offer a comparative examination on whether the economic factor or the industry factor exerts a greater impact on different dimensions of corporate performance in the tourist hotel industry. Changes in the economy can be viewed as the economic factor, whereas the expansion of the market for foreign tourism, proxied by the growth of foreign tourist arrivals, can be used as the industry-specific factor. As Bodie et al. (2008) have argued, compared to the industry factor, the state of the economy might have a greater influence on a firm’s performance. It would be interesting to see if the effect of the economic factor on corporate performance of hotel firms is as strong as that of industry factor.

The remainder of the paper is organized as follows. Section 2 reviews the empirical research efforts in the literature. Section 3 describes the data and variables. Section 4 presents the panel regression models and test results. Discussions and conclusion with some managerial implications are shown in Section 5.
respectively. Empirical results revealed a long-run link between business conditions and stock performance of tourism firms. Further, the improved business conditions could enhance the stock performance of tourism firms and financial success of tourism firms could improve business development.

Tang and Jang (2009) examined the cointegration and causality between sales of four tourism-related industries (airlines, casinos, hotels, and restaurants) and economic growth in the U.S. Test results indicated no cointegration between GDP and sales of all four tourism industries, i.e., there was no long-run link between GDP and industry sales. However, GDP growth could lead to sales growth of all four industries and industry sales failed to cause GDP growth in the short run.

While the development of tourism industry is expected to have a directly beneficial impact on hotels, it can affect the hotel industry via its ability to enhance the state of economy, thus strengthening the corporate performance of hotels. Empirical studies supported that tourism expansion can improve economic condition (Balaguer & Cantavella-Jorda, 2002; Dritsakis, 2004; Gunduz & Hatemi-J, 2005; Kim et al., 2006).

Balaguer and Cantavella-Jorda (2002) proposed a tourism-led growth hypothesis that tourism expansion was a significant factor in the development of the Spanish economy. Empirical results based on cointegration and causality tests supported the hypothesis. Cointegration tests revealed a long-term relationship between tourism receipts and gross domestic product, and causality test results indicated that tourism expansion can cause economic development.

Dritsakis (2004) examined whether tourism could serve as a long-term economic growth factor in Greece. Such a relationship between tourism receipts and GDP was detected. Moreover, there was a bi-directional causality between growth in gross domestic product and tourism receipts. In other words, growth in tourism receipts and GDP growth could promote each other.

Gunduz and Hatemi-J (2005) stated that Turkey, like many developing countries, gave priority to tourism as a part of its economic growth strategy. They tested the tourism-led growth hypothesis by examining whether tourism expansion had contributed to Turkey’s economic growth. Test results showed that tourism development could lead to economic growth and thus validated the applicability of the tourism-led growth hypothesis to Turkey.

Kim et al. (2006) studied the causal relationship between tourism expansion (proxied by growth in the number of total foreign tourist arrivals) and economic growth (GDP growth) in Taiwan. The results based on cointegration and causality tests illustrated a long-run equilibrium link and a bi-directional causality between the two factors. In other words, an expanding economy could lead to the expansion of tourism while the increase in the number of foreign visitors to Taiwan could promote economic growth. Similarly, the spending of international tourists had a positive impact on the economic growth of African countries (Fayissa et al., 2008) and tourism contributed significantly to the improvement of the standard of living in four Southern European countries (Greece, Italy, Portugal and Spain) (Proenca & Soukiazis, 2008).

Lee and Chang (2008) re-examined the long-run comovements and causal links between tourism development and economic growth for OECD and non-OECD countries (including those in Asia, Latin America and Sub-Saharan Africa) using a heterogeneous panel cointegration technique. They found a cointegrated relationship between GDP and tourism development on the global scale, after allowing for the heterogeneous country effect. In addition, tourism development exerted a greater effect on GDP in non-OECD countries than in OECD countries. In the long run, tourism development could cause economic growth in OECD countries and the two factors reinforced each other in non-OECD countries.

In addition, Chen, Kim, and Liao (2009) noted that the tourism industry has experienced a significant growth since the Taiwanese government changed the weekend policy in 2001 and foreign institutional holdings on stocks of tourism companies have escalated since then. They explained that foreign institutional investors increased their holdings on tourism stocks because they anticipated a positive influence of weekend policy changes on earnings of tourism companies and are optimistic about the future corporate performance in the tourism industry. They further showed that the increasing foreign institutional holdings could not only enhance tourism stock performance, but also decrease the risk of tourism stock returns.

To sum up, tourism growth can promote business and boost corporate sales and earnings, thus strengthening the financial performance of hotel firms. The variable of total foreign tourist arrivals (tourism expansion) is hence expected to have an impact on corporate performance in the hotel industry. However, Chen (2007a) compared the impact of economic variables and tourism expansion factor on hotel stock returns in Taiwan. Test results indicated that the tourism expansion factor had a positive but not statistically significant effect on hotel stock performance. Chen (2007c) found that the tourism expansion variable could not satisfactorily explain hotel stock returns in China, either. Chen and Kim (in press) argued that tourism expansion had a more direct impact on tourism firms’ earnings than on their stock performance.

Relatively, not many research papers studied the impact of non-economic forces on financial performance in the tourism industry. Sales earnings of Taiwanese hotel firms were found to be significantly harmed by the earthquake in Taiwan on September 21, 1999 and by the SARS outbreak in March 2003 (Chen & Kim, in press). Chen et al. (2007) illustrated the adverse influence of the SARS outbreak in 2003 on Taiwanese hotel stock prices. Stock prices of publicly traded hotel companies in Taiwan plunged during the SARS outbreak. In addition to the SARS outbreak, several other crises related to the hospitality industry seriously damaged hospitality stock performance. Chen et al. (2005) showed that the earthquake on September 21, 1999 and the terrorist attacks of September 11, 2001 in the U.S. substantially deteriorated hotel stock performance in Taiwan.

Since those crises had a significant influence on financial performance of hotel companies in Taiwan, this study takes those non-economic events into consideration when regression tests are performed. Thus, when examining the impact of economy and tourism development on corporate performance in the tourist hotel industry, we use dummy variables of crisis events to control for the potential effects of those crises on interactions between the corporate performance of tourist hotels and the two factors.

3. Data and variables

The hotel companies covered in this study need to have complete data on all accounting or financial variables over the 11-year period from 1997 to 2008. According to this criterion, we selected five publicly traded hotels: Ambassador Hotel, First Hotel, Grant Formosa Regent Taipei, Hotel Holiday Garden, and Leofoo Corporation. All five hotels are tourist hotels whose stocks are traded on the Taiwan Stock Exchange. All data used in the study are taken from the database of the Taiwan Economic Journal (TEJ) from the second quarter of 1997 to the first quarter of 2008 (44 quarters).

3.1. Corporate performance measures

Occupancy rate (OPR). OPR is the percentage of occupancy and calculated as the number of rooms occupied divided by the number available. It is one of the commonly used performance measures of revenue in the hotel industry (Gray & Ligouri, 2003).
Return on assets (ROA). ROA, computed as net income divided by total assets, is a measure of profit per dollar of assets:

\[
ROA = \frac{\text{Net income}}{\text{Total assets}} \times 100\%.
\] (1)

ROA reflects the ability of a firm's management to generate profits from the firm's assets (Athanasoglou et al., 2008). Kang and Stulz (1997) stated that investors prefer firms with high ROA because it is an indication of management efficiency. ROA is also commonly used to measure corporate performance (Capon, Farley, & Hoenig, 1990; Gonzalez-Hermosillo, Pazarbasioğlu, & Billings, 1997; Hall & Weiss, 1967; Kesner, 1987; Persons, 1999; Thomson, 1991).

Return on equity (ROE). ROE is defined as the net income divided by total equity and a measure of a firm's efficiency at generating profits from every dollar of shareholders' equity:

\[
ROE = \frac{\text{Net income}}{\text{Total equity}} \times 100\%.
\] (2)

ROE is also widely used to measure profitability of companies (Athanasoglou et al., 2008; Capon et al., 1990; Chathoth & Olsen, 2007; Kesner, 1987). Moreover, Liu and Hung (2006) argued that ROA and ROE can measure both profitability and earnings quality of companies.

Stock return (SR). The stock return is the capital gains (or loss), i.e. the percentage change in the price of the stock divided by the initial price:

\[
SR_t = \ln\left(\frac{\text{Stock price}_t}{\text{Stock price}_{t-1}}\right) \times 100\%.
\] (3)

where stock price is the closing price at the end of each quarter. As Heiman (1988) noted, although there are several indicators of a company's financial success, the company's stock price is considered to be the most important. Stock return has been generally used as an indicator for corporate performance (Barro, 1990; Beckers et al., 1992; Chen, 2007b; Chen et al., 2005; Fama & French, 1988).

The overall financial performance (SCORE). As mentioned, this study uses a comprehensive score to measure the overall financial performance of hotels. The overall financial performance or comprehensive score combines measures of asset management (total asset turnover), profitability (ROA and ROE), short-term solvency or liquidity (current ratio and quick ratio) and long-term solvency (debt-equity ratio).

It takes two steps to calculate the variable of SCORE. The first step is the selection of related accounting/financial ratios. Following Boubakri et al. (2005), Kesner (1987), Liu and Hung (2006), and Otchere and Chan (2003), we use several accounting/financial ratios to calculate the comprehensive score (SCORE). The accounting ratios selected in the study need to meet two criteria. The accounting ratios have to have complete data from the second quarter of 1997 to the first quarter of 2008. Moreover, the selected accounting variables can represent six dimensions of corporate performance: capital adequacy, asset quality, management, earnings, liquidity, and sensitivity to market risks (Persons, 1999; Thomson, 1991). Accordingly, six accounting ratios are selected in the study: debt-equity ratio, total asset turnover, current ratio, return on assets, return on equity and quick ratio. The quarterly data of six financial ratios are also obtained from the TEJ database.

Total asset turnover (TAT) measures how efficiently a company uses its assets to generate sales (Weygandt, Kieso, & Kimmel, 2006):

\[
TAT = \frac{\text{Operating revenues}}{\text{Total assets}}
\] (4)

Total asset turnover, the proxy of management capability, can measure the operating efficiency that the board of directors and senior managers command total assets (Gonzalez-Hermosillo et al., 1997; Persons, 1999). Gu and Kim (1998) suggested that a high level of operational efficiency leads to an increase in profit.

Current ratio (CR) is a widely used measure for evaluating a company’s liquidity and short-term debt-paying ability (Weygandt et al., 2006):

\[
CR = \frac{\text{Current assets}}{\text{Current liabilities}} \times 100\%.
\] (5)

According to Kallberg and Parkinson (1992), corporate liquidity can be used to access the management of the firm's assets. Kim, Mauer, and Sherman (1998) stated that the relationship between the liquid asset holdings and the firm's growth opportunities might be positive. Myers (1977) argued that maintaining high liquidity might help in reducing the financial distress. However, high liquidity might also indicate that available resources are not wisely invested, which may increase the investors' risk perception (Borde, 1998).

Quick ratio (QR) is a measure of a company’s immediate short-term liquidity (Weygandt et al., 2006):

\[
QR = \frac{\text{Current assets} - \text{Inventory}}{\text{Current liabilities}} \times 100\%.
\] (6)

The quick ratio also represents the liquidity of companies. According to Ross et al. (2008), inventory is often the least liquid current asset. They indicated that book value is not a very reliable measure of market values because it fails to take the quality of the inventory into consideration. Relatively large inventories are often a sign of problems with short-term liquidity. It is important for firms to maintain the optimal liquidity reserve for contingent use.

Debt-equity ratio (DE) is also called leverage ratio and used to examine the firm’s long-run ability to meet its obligations or financial leverage (Ross et al., 2008):

\[
DE = \frac{\text{Total debt}}{\text{Total equity}} \times 100\%.
\] (7)

Liu and Hung (2006) used this variable as the proxy of capital adequacy to measure if companies maintain ample capital to monitor their own risk. Barton and Gordon (1987) noted, if the environmental conditions are favorable for firm's growth, firms will use more equity and less debt to fund their growth. The pecking order theory also suggests that well-performing firms in terms of their profitability are likely to be less leveraged (Morck, Shleifer, & Vishny, 1988).

Second, after selecting six accounting ratios, we compute the final comprehensive score based on the factor analysis (Choi & Chu, 2001; Chu & Choi, 2000; Hair, Anderson, Tatham, & Black, 1998; Pitt & Jeantrout, 1994; West, 1985). Using factor analysis enables us to create correlated variable composites from the original six financial ratios and identify a smaller set of factors that can explain most of the variances among the ratios (Chu & Choi, 2000). Through the method of factor analysis, we can better understand the underlying structure of the data.

Accordingly, a principal component factor analysis with varimax rotation is performed to extract from the six hotel financial ratios into a set of simplified composite hotel performance factors. Whether a financial ratio should be included in a factor is decided by the factor loadings, eigenvalues and the percentage of variance explained (Hair et al., 1998). Hair et al. (1998) suggest that factors are considered significant and retain only if they have an eigenvalue equal to or greater than 1, and a factor loading equals to or greater than 0.50. As matter of fact, all factors included in the study have a factor loading.
above 0.6. We repeat the same procedure to extract factors from six financial ratios for every quarter. Note that although there are different extracted factors in each quarter, the extracted factors can explain more than 80% of the total variance for each quarter.

After the factor analysis, we obtain the extracted factors that represent corporate performance of hotel companies and the corresponding factor score of each hotel for each quarter. The corresponding factor score of each hotel multiplies the weight of each factor and then sum up to get the quarterly comprehensive scores of hotel performance. In consequence, the comprehensive scores of hotel companies are computed as:

\[
SCORE_i = \sum_{k=1}^{n} W_i \times x_i,
\]

where \(SCORE_i\) is the comprehensive score of corporate performance for the \(i\)th hotel company, \(x_i\) is the corresponding factor score of the \(i\)th hotel company and \(W_i\) is the weight or ratio of the variation explained by each factor divided by the variation explained by all factors:

\[
W_i = \left( \frac{E_i}{\sum_{i=1}^{n} E_i} \right) \times 100,
\]

where \(W_i\) is the weight of the \(i\)th factor, \(E_i\) is the variation explained by the \(i\)th factor and \(k\) is the number of factors.

### 3.2. The economy and tourism growth

Gross domestic product (GDP), the measure of the economy's total production and services, is used as the proxy for economic condition. Real GDP growth therefore represents changes in economic condition (Athanasoglou et al., 2008; Bikker & Hu, 2002; Chen, 2007b; Kim et al., 2006). The growth rate of real GDP (ΔGDP) is computed as:

\[
ΔGDP = \ln(GDP_t/GDP_{t-1}) \times 100.
\]

The hotel industry, as a cyclical industry, is very sensitive to the economy. Shifts in economic condition can have a great impact on the success of hotel firms. A business expansion (contraction) can strengthen (weaken) corporate earnings and profit, which in turn can improve (worsen) corporate performance of hotel companies. We therefore anticipate that the hotel industry has a better corporate performance in better economic times. Accordingly, it is hypothesized that corporate performance of hotel companies is positively related to economic growth.

The growth rate of total foreign tourist arrivals (ΔTA) is used to represent tourism growth or expansion (Chen, 2007a, 2007c; Kim et al., 2006; Wang & Godbey, 1994) and calculated as:

\[
ΔTA_t = \ln(TA_t/TA_{t-1}) \times 100.
\]

Tourism expansion can lift the occupancy rate and earnings and enhance the financial performance of hotel companies. In addition, as empirical studies have shown, tourism expansion can boost economic development (Balaguer & Cantavella-Jorda, 2002; Dritsakis, 2004; Gunduz & Hatemi-J, 2005; Kim et al., 2006) and the improved economy caused by tourism expansion can raise sales and corporate earnings. High tourism arrivals growth is expected to have a favorable impact on corporate performance of hotel firms. Consequently, corporate performance of hotel companies is hypothesized to be positively related to tourism growth.

The internal factor, the variable of firm size (SIZE), is used as a control variable. SIZE is measured by the natural logarithm of the average total assets. This data of hotel firm size are also taken from the TEJ financial database. In addition, the possible influences of some recent unexpected crisis events related to the hotel industry are also incorporated into the test regressions. As mentioned, the crisis events under consideration in the study are the earthquake of September 21, 1999 (the 921 earthquake), the terrorist attacks of September 11, 2001 in the U.S. (the 911 terrorist attacks) and the outbreak of SARS on April 22, 2003 (the SARS outbreak).

Table 1 summarizes the statistics of OPR, ROA, ROE, SR, SCORE, ΔGDP, ΔTA and SIZE over the entire sample period (see panel A). Among all variables, the SCORE variable is the most volatile, showing that the overall performance of hotel companies swings much more widely. ΔTA and SR are also volatile, ranging from 101.39% to −129.05% with a mean of 1.00% and from 52.115% to −36.64% with a mean of 2.91%, respectively. The variations of OPR, ROA, ROE, ΔGDP and SIZE are relatively smaller.

Panel B in Table 1 displays the correlation coefficient values among the five dependent variables and the exploratory variables over the entire sample period. As shown in Table 1, OPR is significantly correlated with ΔGDP, whereas OPR, ROA and ROE are highly correlated with ΔTA. However, hotel stock return (SR) is not significantly correlated with either ΔGDP or ΔTA. The overall performance (SCORE) appeared to be strongly correlated with both ΔGDP and ΔTA. Moreover, high correlation between ΔGDP and ΔTA indicates that economic growth and tourism development are highly correlated. This is consistent with the empirical finding in Kim et al. (2006). They show that the growing inflow of foreign visitors to Taiwan promotes economic development and an expanding economy leads to tourism expansion.

### 4. Methodology and results

#### 4.1. Panel regression tests

To examine the impact of economic condition and tourism growth on corporate performance of hotel companies, we perform panel regression tests using a balanced panel data of five hotel companies spanning the period from 1997 to 2008. Baltagi (2005) and Hsiao (1986) argued that panel data methodology can control for an individual firm's heterogeneity, reduce problems associated with multicollinearity and estimation bias and specify the time-varying relation between dependent and independent variables. Moreover, when performing panel regression tests, we also consider three estimation methods: pooled ordinary least square (OLS), fixed effects and random effects. Accordingly, the following panel regression tests are performed:

\[
OPR = \alpha_{10} + \beta_{11}\Delta GDP + \beta_{12}\Delta TA + \beta_{13}SIZE + \beta_{14}D921 + \beta_{15}D911 + \beta_{16}DSARS + \epsilon_1,
\]

\[
ROA = \alpha_{20} + \beta_{21}\Delta GDP + \beta_{22}\Delta TA + \beta_{23}SIZE + \beta_{24}D921 + \beta_{25}D911 + \beta_{26}DSARS + \epsilon_2,
\]

\[
ROE = \alpha_{30} + \beta_{31}\Delta OLS + \beta_{32}\Delta TA + \beta_{33}SIZE + \beta_{34}D921 + \beta_{35}D911 + \beta_{36}DSARS + \epsilon_3,
\]

\[
SR = \alpha_{40} + \beta_{41}\Delta GDP + \beta_{42}\Delta TA + \beta_{43}SIZE + \beta_{44}D921 + \beta_{45}D911 + \beta_{46}DSARS + \epsilon_4,
\]

\[
SCORE = \alpha_{50} + \beta_{51}\Delta GDP + \beta_{52}\Delta TA + \beta_{53}SIZE + \beta_{54}D921 + \beta_{55}D911 + \beta_{56}DSARS + \epsilon_5.
\]
where D921, D911 and DSARS denotes the dummy variable of the 921 earthquake (September 1999), the 911 terrorist attacks in the US (September 2001), the SARS outbreak (April 2003) respectively. All dummy variables take the value of 1 during the corresponding quarter on the event date and 0 otherwise.

Before running panel regression tests, we use the unit root test to examine the stationarity of all variables. To avoid the spurious regression, we have to confirm that all variables are stationary. The panel unit root tests of Breitung (2000) and Im, Pesaran, and Shin (2003) are executed to examine the stationarity of all variables. Results of both tests indicate that \( \Delta GDP, \Delta TA, OPR, ROA, ROE, SR, SCORE \) and SIZE are all stationary (see Table 2).

Linear panel data regression test can be estimated using three methods: pooled ordinary least square (OLS), the fixed effects method and the random effects method (Dimitrios, 2005). The pooled OLS method estimates a common constant for all cross-sections. That is, there are no differences between the estimated cross-sections. The constant is treated as section-specific in the fixed effects method. The difference between the fixed effects method and random effects method is that the constants of the random effects method for each section are random parameters.

The fixed effects estimator is also called the least squares dummy variables estimator because the fixed effects method includes a dummy variable for each hotel to allow for different conditions for each hotel. Consider the following model:

\[
y_{it} = \alpha_i + \beta_1 x_{1it} + \beta_2 x_{2it} + \ldots + \beta_k x_{kit} + e_{it}. \quad (17)
\]

We can re-write the model in the matrix notation as:

\[
Y = D\alpha + X\beta + E, \quad (18)
\]

where

\[
Y = \begin{pmatrix} y_{11} \\ y_{12} \\ \vdots \\ y_{nT} \end{pmatrix}, \quad D = \begin{pmatrix} 1 & 0 & \ldots & 0 \\ 0 & 1 & \ldots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & 0 & \ldots & 1 \end{pmatrix}_{T \times n}, \\
X = \begin{pmatrix} x_{111} & x_{121} & \ldots & x_{1it} \\ x_{112} & x_{122} & \ldots & x_{1iT} \\ \vdots & \vdots & \ddots & \vdots \\ x_{11nT} & x_{12nT} & \ldots & x_{1IT} \end{pmatrix}_{n \times k}, \quad \alpha = \begin{pmatrix} \alpha_1 \\ \alpha_2 \\ \vdots \\ \alpha_k \end{pmatrix}_{n \times 1}, \\
\beta = \begin{pmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_k \end{pmatrix}_{k \times 1}, \quad \gamma = \begin{pmatrix} 1 \\ 1 \\ \vdots \\ 1 \end{pmatrix}_{T \times 1}.
\]

Table 1
Summary statistics of all variables and Pearson correlations among variables.

|            | OPR  | ROA  | ROE  | SR   | SCORE | \( \Delta GDP \) | \( \Delta TA \) | SIZE |
|------------|------|------|------|------|-------|------------------|---------------|------|
| Mean       | 0.697| 1.089| 1.248| 2.914| 4.312 | 1.079           | 1.003         | 15.283 |
| Median     | 0.722| 0.800| 1.020| 2.260| -0.300| 1.422           | 0.247         | 15.512 |
| Maximum    | 0.938| 7.550| 9.890| 52.110| 145.868| 7.469            | 101.389       | 16.241 |
| Minimum    | 0.138| -10.790| 16.920| -36.640| -0.9279| -3.393           | -129.054      | 13.721 |
| Standard deviation | 0.143| 1.971| 2.717| 12.859| 36.036| 2.971           | 26.287        | 0.761 |

Panel B: Pearson correlations

\[
\begin{align*}
\Delta GDP & : 0.0922^* & 0.0558 & 0.0713 & -0.0044 & 0.259\,^*** & 1.00 & - & - \\
\Delta TA & : 0.3040\,^*** & 0.1256^* & 0.1308\,^** & 0.0585 & 0.245\,^* & 0.383\,^*** & 1.00 & - \\
SIZE & : 0.523\,\,^*** & -0.0361 & -0.0364 & -0.0015 & -0.058\,8 & -0.0169 & 0.005\,5 & 1.00 \\
\end{align*}
\]

Note: OPR = occupancy rate; ROA = return on assets; ROE = return on equity; SR = quarterly stock returns; SCORE = the comprehensive scores; \( \Delta GDP \) = real GDP growth; \( \Delta TA \) = growth rate of total foreign tourist arrivals; SIZE = the natural logarithm of the average total assets. *Significance at the 10% level. **Significance at the 5% level. ***Significance at the 1% level.

Table 2
Results of panel unit root tests.

| Test of Im, Pesaran and Shin \[p-value\] | Breitung test \[p-value\] |
|----------------------------------------|--------------------------|
| Panel A: The null hypothesis: The variable under consideration has a unit root | | |
| \( \Delta GDP \) | -0.081\,12 \[0.0000\]\,**** | -4.559\,8 \[0.0000\]\,**** |
| \( \Delta TA \) | -14.37\,13 \[0.0000\]\,**** | -15.81\,23 \[0.0000\]\,**** |
| Panel B: The null hypothesis: The variable under consideration has a unit root | | |
| OPR | -3.859\,0 \[0.0001\]\,**** | -4.220\,4 \[0.0000\]\,**** |
| ROA | -5.686\,4 \[0.0000\]\,**** | -5.868\,5 \[0.0000\]\,**** |
| ROE | -5.729\,0 \[0.0000\]\,**** | -5.214\,1 \[0.0000\]\,**** |
| SR | -5.457\,7 \[0.0000\]\,**** | -5.447\,9 \[0.0000\]\,**** |
| SCORE | -1.830\,7 \[0.0336\]\,**** | -3.527\,3 \[0.0002\]\,**** |
| SIZE | -1.682\,4 \[0.0508\]\,**** | -2.043\,8 \[0.0205\]\,**** |

Note: Both test equations include an individual intercept and time trend. *, **, and *** indicate that the null hypothesis can be rejected at the 10%, 5% and 1% level, respectively.
reveal that panel regressions based on Eqs. 12–14 and 16 are significant at the 1% level, but panel regression based on Eq. (15) is not statistically significant. That is, while the fixed effects method is appropriate for regression equations 12–14 and 16, the pooled OLS is more suitable for regression equation (15). Accordingly, it is necessary to examine whether fixed or random effects method should be used when performing panel regressions based on Eqs. 12–14 and 16.

The random effects model suggests that the intercepts \( \alpha \) of different hotels are random and independently drawn from population. Random effects model focuses on arbitrary individuals that have certain characteristics and allows us to make inference with respect to the population characteristics. Based on the random effects model, the matrix notation can be written as:

\[
Y = \alpha + X\beta + \mu + E, \tag{21}
\]

where \( \alpha \) is the random intercept, \( \mu \) is the error term of the random intercept, \( \mu \sim \text{iid}(0, \sigma^2_\mu) \).

The Hausman test is used to determine if the fixed or random effects should be considered. The null hypothesis is that \( \alpha \) and \( X \) are uncorrelated and thus random effects are consistent and efficient (Dimitrios, 2005; Maddala, 2001):

\[
H_0 : E(\mu | X) = 0. \tag{22}
\]

The test statistic is:

\[
\omega = (\hat{\beta}_{FE} - \hat{\beta}_{RE})' [\text{Var}(\hat{\beta}_{FE}) - \text{Var}(\hat{\beta}_{RE})]^{-1} (\hat{\beta}_{FE} - \hat{\beta}_{RE}) \sim \chi^2(k). \tag{23}
\]

where \( \hat{\beta}_{FE} \) is the estimator of the fixed effects model, \( \hat{\beta}_{RE} \) is the estimator of the random effects model. If the test statistic is large (i.e. the difference between the two estimators is significant), we can reject the null hypothesis that the random effects model is consistent, suggesting that the fixed effects model is more appropriate. The Hausman (1978) test results (see panel B in Table 3) illustrate that panel regressions based on Eqs. 12–14, and 16 are significant at the 1% level. Hence, the fixed effects model is used to perform panel regressions for Eqs. 12–14 and 16.

4.2. Empirical results

Empirical results of panel regression tests based on Eqs. 12–16 are summarized in Tables 4–8, respectively. Panel regression test results in Table 4 show that coefficients of \( \Delta GDP \) and \( \Delta TA \) are positive and statistically significant at the 10% and 5% level respectively, implying that \( \Delta GDP \) and \( \Delta TA \) have a significant impact on \( OPR \). This is consistent with the correlation coefficient values reported in Table 1 that \( OPR \) is highly correlated with \( \Delta GDP \) and \( \Delta TA \). The explanatory power (adjusted \( R^2 \) value) of \( \Delta GDP \) and \( \Delta TA \) on \( OPR \) is relatively high at about 45% (see panel B) and 53% (see panel C), respectively. These results indicate that \( \Delta GDP \) and \( \Delta TA \) are strong explanatory factors of \( OPR \). The link between \( OPR \) and \( SIZE \) is found to be significantly positive, suggesting that tourist hotels with larger size enjoy higher occupancy rate. It is also found that the negative coefficients of the dummy variables of \( D911 \) and \( DSARS \) are statistically significant at the 1% level.

\( \Delta TA \), as shown in Tables 5 and 6, has a positive impact on \( ROA \) and \( ROE \) and its effect (the coefficient of \( \Delta TA \)) is statistically significant at the 5% level. This supports the correlation coefficient values in Table 1 that both \( ROA \) and \( ROE \) are correlated with \( \Delta TA \). The overall explanatory power of \( \Delta TA \) on \( ROA \) and \( ROE \) is also high at about 48% and 45% (see panel B in both tables), respectively. While \( \Delta GDP \) exhibits a positive influence on both \( ROA \) and \( ROE \), its influence is not statistically strong. In addition, \( SIZE \) is found to be negatively related to \( ROA \) and \( ROE \). Among three dummy variables, only \( DSARS \) has a significantly negative impact on \( ROE \).

Test results in Table 7 reveal that \( \Delta TA \) and \( \Delta GDP \) have a positive effect on \( SR \), but their effects are not statistically significant. The low adjusted \( R^2 \) value of pooled OLS regression implies the goodness-of-fit for the estimated regression equation is poor and the two independent variables explain very little proportion of variation in hotel stock returns. The overall adjusted \( R^2 \) value is also relatively low at 6%. It is also found that there is no strong relationship between \( SIZE \) and \( SR \). \( DSARS \) and \( D921 \) have a significantly negative influence on \( SR \).

Tests results presented in Table 8 illustrate that the coefficients of \( \Delta GDP \) and \( \Delta TA \) are positive and statistically significant at the 1% and 5% level, respectively. The findings indicate that a better economic condition and tourism development can improve the overall corporate performance of tourist hotels. The overall explanatory power of \( \Delta GDP \) and \( \Delta TA \) on the comprehensive score is significant.

### Table 3

Results of F-test and Hausman specification test.

| Panel A: The null hypothesis: | F-statistic | t-statistic | p-value |
|-------------------------------|-------------|-------------|---------|
| The pooled OLS is more appropriate than the fixed effects model | 58.0536 [0.0000]*** | -1.8865 | 0.0696* |
| \( OPR \) (regression equation (12)) | 56.9582 [0.0000]*** | 1.7368 | 0.0839* |
| \( ROA \) (regression equation (13)) | 53.9729 [0.0000]*** | 5.0696 | 0.0000*** |
| \( ROE \) (regression equation (14)) | 3.9897 [0.8094] | -3.4850 | 0.0006*** |
| \( SCORE \) (regression equation (15)) | 4.1028 [0.0032]*** | -1.6144 | 0.1080 |
| Panel B: The null hypothesis: | 11.8671 [0.0000]*** | -2.9800 | 0.0032*** |
| The random effects model is more appropriate than the fixed effects model | 12.0987 [0.0000]*** | 3.2980 | 0.0016 |

F-statistics [p-value] = 60.1464 [0.0000]***, Adjusted \( R^2 \) = 0.7298

### Table 4

Results of panel regression test: occupancy rate (OPR).

| Panel | Coefficient | t-statistic | p-value |
|-------|-------------|-------------|---------|
| A     | Constant   | -0.8391 | -1.8865 | 0.0696* |
|       | \( \Delta GDP \) | 2.2620 | 1.7368 | 0.0839* |
|       | \( \Delta TA \) | 0.1834 | 5.0696 | 0.0000*** |
|       | \( SIZE \) | 0.1014 | 3.4850 | 0.0006*** |
|       | \( D911 \) | -0.0399 | -1.6144 | 0.1080 |
|       | \( DSARS \) | -0.2527 | -11.8671 | 0.0000*** |

F-statistics [p-value] = 36.7593 [0.0000]***, Adjusted \( R^2 \) = 0.4495

### Table 5

Results of panel regression test: profit margin ROA.

| Panel | Coefficient | t-statistic | p-value |
|-------|-------------|-------------|---------|
| B     | Constant   | 0.6920 | 90.8774 | 0.0000*** |
|       | \( \Delta GDP \) | 0.0045 | 1.8465 | 0.0662* |

### Table 6

Results of panel regression test: profit margin ROE.

| Panel | Coefficient | t-statistic | p-value |
|-------|-------------|-------------|---------|
| C     | Constant   | 0.6952 | 105.2568 | 0.0000*** |
|       | \( \Delta TA \) | 0.0016 | 6.4488 | 0.0000*** |

F-statistics [p-value] = 50.7300 [0.0000]***, Adjusted \( R^2 \) = 0.5317

Note: Sample observations = 220.

*Significance at the 10% level.

**Significance at the 5% level.

***Significance at the 1% level.
Table 5  
Results of panel regression test: ROA.  

| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Panel A      |              |         |
| Constant     | 36.2428      | 4.3907  | 0.0000*** |
| ΔGDP         | 0.0014       | 0.0400  | 0.9681   |
| ΔTA          | 0.0089       | 2.2169  | 0.0277***|
| SIZE         | -2.2982      | -4.2559 | 0.0000***|
| DSARS        | -0.2021      | -0.4403 | 0.6602   |
| D911         | -0.0123      | -0.0266 | 0.9788   |
| DSARS        | -0.6652      | -1.4536 | 0.1476   |

F-statistics [p-value] = 23.7500 [0.0000]***, Adjusted R² = 0.5095

Panel B  
| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Constant     | 1.0799       | 11.2085 | 0.0000*** |
| ΔTA          | 0.0094       | 2.5654  | 0.0110*** |

F-statistics [p-value] = 38.5857 [0.0000]***, Adjusted R² = 0.4748

Note: Sample observations = 220.  
*Significance at the 10% level.  
**Significance at the 5% level.  
***Significance at the 1% level.

Table 6  
Results of panel regression test: ROE.  

| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Panel A      |              |         |
| Constant     | 54.2086      | 4.7057  | 0.0000*** |
| ΔGDP         | 0.0174       | 0.3508  | 0.7244   |
| ΔTA          | 0.0119       | 2.1383  | 0.0337** |
| SIZE         | -3.4629      | -4.5951 | 0.0000***|
| D921         | -0.2501      | -0.3904 | 0.6966   |
| D911         | -0.1937      | -0.3009 | 0.7637   |
| DSARS        | -1.0399      | -1.6297 | 0.1040*  |

F-statistics [p-value] = 22.6938 [0.0000]***, Adjusted R² = 0.4976

Panel B  
| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Constant     | 1.2342       | 9.1001  | 0.0000*** |
| ΔTA          | 0.0135       | 2.6171  | 0.0095*** |

F-statistics [p-value] = 30.9444 [0.0000]***, Adjusted R² = 0.4527

Note: Sample observations = 220.  
*Significance at the 10% level.  
**Significance at the 5% level.  
***Significance at the 1% level.

Table 7  
Results of panel regression test: stock return (SR).  

| Coefficient | t-statistics | p-value |
|--------------|--------------|---------|
| Panel A      |              |         |
| Constant     | 2.2626       | 0.1331  | 0.8943   |
| ΔGDP         | 0.0993       | 0.3138  | 0.7506   |
| ΔTA          | 0.0901       | 1.6075  | 0.1100   |
| SIZE         | -0.0646      | 0.0582  | 0.9537   |
| D921         | -14.5338     | -2.5541 | 0.0114***|
| D911         | -14.7978     | -2.5867 | 0.0104***|
| DSARS        | -15.2777     | -1.7401 | 0.0833** |

F-statistics [p-value] = 2.0312 [0.0629]*, Adjusted R² = 0.0562

Note: Sample observations = 220.  
*Significance at the 10% level.  
**Significance at the 5% level.  
***Significance at the 1% level.

5. Discussions and conclusion

This study examines the impact of economic and industry factors on corporate performance of tourist hotels in Taiwan. The economic factor is changes in the economy (real GDP growth rate, ΔGDP), whereas tourism expansion (the growth rate of foreign tourist arrivals, ΔTA) is used as the industry-specific factor. The indicators of corporate performance of hotels under consideration include occupancy rate (OPR), return on assets (ROA), return on equity (ROE), stock return and a comprehensive score. OPR is a common performance measure of sales revenue in the hotel industry. ROA and ROE measure the profitability of hotel companies, whereas stock return can evaluate hotel stock performance. Based on factor analysis approach, six accounting ratios (total asset turnover, return on assets, return on equity, current ratio, quick ratio and debt-equity ratio) are used to compute a comprehensive score that can measure the overall financial performance rather than just sales revenue, profitability and stock performance. The comprehensive score combines measures of asset management (total asset turnover), profitability (ROA and ROE), short-term solvency or liquidity (current ratio and quick ratio) and long-term solvency (debt-equity ratio). The effects of ΔGDP and ΔTA on corporate performance in the tourist hotel industry are then scrutinized via panel regression tests.

Panel regression test results reveal that both economic and industry factors have a positive and significant effect on occupancy rate of Taiwanese tourist hotels. The results imply that tourist hotels can enjoy a better occupancy rate when the economy is expanding and the foreign tourist market is growing. In contrast, the hotel occupancy will suffer if the economy is in recession and tourism interest in Taiwan is low. Compared to the economic factor, the industry factor explains more variation in occupancy rate. Changes in the state of economy can account for 45% of variation in occupancy rate, whereas tourism expansion describes even as high as 53% of variation in occupancy rate. In other words, the sales revenue of tourist hotels relies heavily on the development of foreign tourist markets and economic conditions. These results also support the assumption that the growth of total foreign tourist arrivals should have a direct and beneficial influence on corporate performance of tourism-related companies.

Both economic and industry factors are found to have a positive impact on hotels’ ROA and ROE, but only the influence of tourism expansion is statistically significant. That is, the profitability of

Table 8  
Results of panel regression test: the comprehensive score (SCORE).  

| Coefficient | t-statistics | p-value |
|--------------|--------------|---------|
| Panel A      |              |         |
| Constant     | 599.6884     | 3.7795  | 0.0000*** |
| ΔGDP         | 2.2620       | 2.9718  | 0.0033*** |
| ΔTA          | 0.1834       | 2.1279  | 0.0345**  |
| SIZE         | -40.2730     | -3.4693 | 0.0006*** |
| D921         | 13.1808      | 1.3359  | 0.1830   |
| D911         | -20.4342     | -2.1222 | 0.0350**  |
| DSARS        | -30.1353     | -3.0629 | 0.0025*** |

F-statistics [p-value] = 5.8465 [0.0000]***, Adjusted R² = 0.2186

Panel B  
| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Constant     | -18.0118     | -7.9201 | 0.0000*** |
| ΔGDP         | 2.8618       | 3.9693  | 0.0001*** |

F-statistics [p-value] = 4.0592 [0.0015]***, Adjusted R² = 0.0866

Panel C  
| Coefficient | F-statistics | p-value |
|--------------|--------------|---------|
| Constant     | -15.2307     | -7.0948 | 0.0000*** |
| ΔTA          | 0.3061       | 3.7421  | 0.0002*** |

F-statistics [p-value] = 3.7018 [0.0031]***, Adjusted R² = 0.0796

Note: Sample observations = 220.  
*Significance at the 10% level.  
**Significance at the 5% level.  
***Significance at the 1% level.
tourist hotels in Taiwan is more closely related to the industry factor rather than economic factor, and the development of foreign tourist market displays a greater impact on the profitability of tourist hotels. In specific, tourism expansion can account for more than 47% and 45% of variation in ROA and ROE of tourist hotels, respectively. While shifts in economic condition can strongly affect sales revenue of tourist hotels, they exhibit no substantial influence on the profitability.

Stock performance of tourist hotels, however, is found to be not significantly linked to changes in both economic condition and inflow of foreign tourists. The insignificant impact of economic and tourism growth on hotel stock returns might be attributable to a time-varying discount rate caused by investors' changing perceptions about the riskiness of cash flows. Note that variations in stock prices, according to the basic stock valuation model, reflect changes in both expected cash flows and the discount factor (perceived riskiness of a stock's cash flows). While the booming economy and especially strong tourism expansion can impact hotel stock prices majorly through their influences on sales revenue of tourist hotels as illustrated above, investors' changing perceptions about the riskiness of cash flows can lead to changes in the discount rate (or the time-varying discount rate). Hence, the time-varying discount rate, caused by investors' changing perceptions about the riskiness of cash flows, can break the tie between hotel stock returns and the two factors, regardless of how good the state of economy and how successful tourism development can be in improving earnings performance.

In addition, both economic and industry factors are positive and significant explanatory variables of the overall financial performance of tourist hotels. This indicates that a better economic climate and tourist market development can improve the financial health of tourist hotels. Moreover, the economic factor can explain a slightly more percentage of variation in the overall financial performance of tourist hotels than the industry factor. The economic growth factor accounts for about 9% and the tourism expansion factor accounts for about 8%. Nonetheless, the proportion of variation in the overall financial performance explained by both factors is relatively small, compared to those of variation in occupancy rate and profitability.

Among three unexpected crisis events dummy variables, the SARS outbreak had the most serious impact on corporate performance in the tourist hotel industry. The SARS outbreak significantly reduced the occupancy rate, profitability, stock performance and the performance of tourist hotels. The 911 terrorist attacks in the US seriously damaged the occupancy rate, stock performance and performance. In comparison, the 921 earthquake only hurt the hotel stock returns. Since crises greatly reduced the occupancy rate (i.e., earnings revenue or expected cash flows of tourist hotels), investors' perceived riskiness of cash flows of hotel stocks would increase. Hence, a plunge in expected cash flows and a surge in the discount factor caused poor hotel stock returns. These results are generally consistent with findings in Chen et al. (2005) and Chen et al. (2007).

There are several explanations for the relatively weaker influence of the 921 earthquake on hotel performance. First, while the 921 earthquake substantially damaged the Taichung area (the middle of the Taiwan island), all five publicly traded tourist hotels are located in the Taipei area (the northern part of the island). Thus the event had no significant effect on occupancy rate, profitability and performance. Second, the 921 earthquake was considered as a local crisis, one that did not seriously damage the foreign tourist market. This is supported by the statistics. The growth rate of foreign tourist arrivals was –5.21% in the third quarter of 1999 (when the 921 earthquake struck), which is relatively small compared to –9.87% and –129.05% for the corresponding quarter of the 911 terrorist attacks in the US and the SARS outbreak. Since the growth rate of foreign tourist arrivals has a substantial influence on corporate performance of tourist hotels, it explains why the damage of the 921 earthquake and the SARS outbreak is the least and the most serious, respectively.

Empirical findings also offer valuable information and implications for government, tourism policymakers, tourist hotel owners, and managers in Taiwan. First, although the internal factor, hotel size, can have a positive impact on occupancy rate, it is negatively related to profitability and the performance of tourist hotels. In other words, large tourist hotels generate better sales, but worse corporate performance in terms of profitability. The poor profitability and the corporate performance of tourist hotels may be attributed to the following reasons. Net profit is equal to total revenues minus total cost. Large tourist hotels enjoy high occupancy and hence sales revenue, but low profitability. Apparently, they need to focus on the issue of cost control.

Further, according to the agency theory, it may become harder for hotel owners to monitor and control managers' abnormal behavior as hotel companies grow (Pi & Timme, 1993). Adams and Buckley (2003) argue that large organizations can inhibit financial performance because of diseconomies of scale, resource misallocation, and the failure of managers to exploit output efficiencies. Chen and Soo (2007) also state that hotel companies provide many services that tourists demand. Those services include accommodation, food, beverages and laundry, swimming pools, and conference facilities. The quality of these services, not hotel size, might be a more important factor in ensuring corporate performance in the tourist hotel industry.

Second, this study demonstrates that the corporate performance in the tourist hotel industry is closely related to the state of economy and especially to tourism growth. Moreover, economic growth is highly correlated with tourism development. This supports the findings in Kim et al. (2006), who found a long-term association between economic growth and tourism expansion and a bi-directional causality between tourism and economic growth in Taiwan. In other words, economic development and tourism growth can promote each other. Since both economic growth and tourism expansion can have a significant impact on the corporate performance of tourist hotels, it is appropriate for the Taiwanese government to use a long-term tourism strategic plan to develop the tourism market, thus stimulating the economy and corporate performance in the tourist hotel industry.

In particular, since taking office in May 2008, the Taiwanese president Ma Ying-Jeou has actively advocated stronger economic ties with China (Taiwan Tourism Bureau, 2008). One of his policies was to re-open direct flights between Taiwan and China, which had been banned since 1949. Taiwan and China signed the agreement to restore regular direct flights between the two regions on June 13, 2008 and direct flights resumed on July 4, 2008. Currently, up to 3000 Chinese tourists a day are allowed to visit Taiwan and the number may increase from 3000 to 7200 after May 2009. This phenomenon of tourism growth is expected to improve the Taiwanese economy and the corporate performance of local hotel companies. For example, it is estimated that 3000 Chinese visitors per day would bring at least 60 billion Taiwanese dollars (US $2.7 billion) a year for local restaurants, hotels, bus companies and tour agents and moreover, approximately 30,000 jobs could be created, reducing domestic unemployment rate by one percent (AsiaOne, 2008).

Third, the occupancy rate, return on assets and return on equity of tourist hotels rely on the development of foreign tourist markets in Taiwan. This implies that tourism authorities and hotel business managers need to be aware that the sales revenue and profitability
in the tourist hotel industry would suffer during periods of unstable or low demand for tourism. To solve this problem, tourism policymakers and hotel managers can use the practical findings in Jang and Chen (2008) as guidelines for diversification or risk management in the Taiwanese tourism market. They used the financial portfolio theory to show how Taiwan can obtain optimal foreign tourist market mixes by minimizing variability in foreign tourist arrivals.

Finally, while the economic factor explains a very high proportion of sales (45%) and the industry factor explains a very high proportion of sales (53%) and profitability (45–47%), the two factors together can only account for a relatively small percentage (about 17%) of the overall financial performance of tourist hotels. This suggests that a large proportion of the overall financial performance of tourist hotels is still unexplained and affected by other factors. Note that both economic condition and tourism growth are external factors for the hotel industry. The development of the local economy and tourism market may depend on the development of the global economy and local government policies and efforts. Hotel owners and managers, instead, could concentrate on some internal factors or issues, such as cost control, the service quality, managerial efficiency, production productivity and human resource management. Whether those internal factors can explain the overall financial performance of tourist hotels deserves further examination.

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