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Hotel Firm Market Performance and Firm-Wise Financial Factors : An Investigation Using Fixed Effects Regression Model

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Abstract : This study empirically investigates the relationship between firm-wise financial factors and firm market performance in the US hotel industry from 2000 to 2004. Three types of panel data regression models were tested and the fixed effects model was identified as the most appropriate one. Three financial variables, namely debt leverage, sales growth, and firm size were found to have significant impacts on hotel firm market performance in our estimated fixed effects model. The findings indicate that larger hotels that pursue sales growth and have a low reliance on debt financing are better performers in the capital market during the study period.

Key Words: financial factors, firm performance, hotels, fixed effects model

Introduction

Financial research studies in the hospitality field have been paying attention to firm market performance determinants in recent years (Gu & Kim, 2001; Kim & Kim, 2005; Mooradian & Yang, 2001; Phillips & Sipahioglu, 2004; Tsai & Gu 2007). These studies attempted to investigate the relationship between firm performance and brand equity, capital structure, dividend policy, institutional ownership as well as managerial ownership, respectively. As the attempts have concentrated on just one particular financial feature's impact on firm market value, they are limited in terms of investigation scope. To the best of our knowledge, no studies that focus on the relationship between a hospitality firm's market performance and a wide range of firm-wise financial factors have been conducted in a comprehensive way for the hotel industry. The goal of a firm is to maximize the firm value for the owner or the shareholder

(Scott, Martin, Petty, & Keown, 1999). Identifying a wide range of financial factors that have significant impacts on hospitality firm value or market performance is of critical importance to hospitality practitioners and researchers as well. Therefore, the purpose of this study is to simultaneously and comprehensively examine a broad range of firm-wise financial features to determine their impacts, if any, on hotel firm market performance. Those financial features will encompass a hotel firm's operating, investing, financing and dividend strategies. A thorough understanding of the relationship between those financial features and firm performance should help hoteliers come up with ways to improve the industry's performance in the capital market.

Potential Performance Determinants : A Review

Firm-wise financial factors, as related to firm market performance, have been widely researched in financial management literature. They are a firm's financial characteristics resulting from its policies in operating, investing, financing, and dividend distribution. Before conducting a comprehensive investigation of their impact on hotel firm performance, an overall review of various firm-wise financial characteristics proposed and examined by previous studies in their relationship with firm performance is necessary.

Liquidity

According to Scott, et al. (1999), liquidity measures a firm's capability to pay for its short-term liabilities and the quickness and certainty of an asset to be converted into cash at its fair market value. Good liquidity management may help improve operating profits and enhance firm performance. While insufficient liquidity is likely to cause default on payments, excessive liquidity may waste company resources and lower profitability. Therefore, the goal of liquidity management is to find an appropriate liquidity level to minimize operating costs and eventually to improve firm performance. Empirical results on the liquidity and firm performance relationship have been mixed. While some supported a positive relationship between the two (Baskin, 1987; Opler, Pinkowitz, Stulz, & Williamson, 1999); others identified an inverse relationship (Shin & Soenen, 1998).

Financial Leverage

Financial leverage measures a firm's financial structure (debt versus equity) and reflects a firm's ability to meet its long-term obligations. According to optimal capital structure theory, there exists an inverted U-shape relationship between debt usage and firm value (Moyer, McGuigan, & Kretlow, 2001). The optimal debt level is reached when the marginal costs of debt just offset

the marginal benefits of debt. Empirically, Grossman and Hart (1986), Harris and Raviv (1990), and Zantout (1997) found a positive association between financial leverage and firm market performance. On the contrary, Capton, Farley and Hoenig (1990) and John (1993) identified a negative correlation between financial leverage and firm value.

Activity

A firm's activity factor refers to the efficiency of the management team in using firm assets to create sales revenue. Activity in general indicates how rapidly non cash assets flow through a firm and how quickly these assets generate revenue (Moyer et al., 2001). Kiymaz (2006) and Roenfeldt & Cooley (1978) not only proposed a positive relationship between assets efficiency and firm performance but also empirically showed that an increase in asset efficiency would lead to higher firm value.

Growth

As indicated by Reilly and Brown (2006), revenue growth may affect firm performance. High growth potential is often associated with an increase in stock price because firms with growth capacity may increase market share and create synergy effects, thereby leading to favorable market performance. Conversely, high growth may imply high risk and negatively affect firm value because fast-growing firms may be confronted with increased competition and are more vulnerable to economic fluctuations (Idol, 1978; Logue & Merville, 1972). Furthermore, management's pursuit of growth at the owner's expense could lead to a negative relationship between growth and firm value (Hill & Jones, 1995). Both positive (Capon et al., 1990; Roenfeldt & Cooley, 1978) and negative (Fuller & Jensen, 2002; Ramezani, Soenen, & Jung, 2002) relationships between growth and firm market performance were found in previous empirical studies.

Profitability

Profitability measures how well management makes investment and financial decisions to generate profits (Moyer et al., 2001). Higher than expected profits, reflected in higher earnings per share (EPS) is often associated with an increase in stock price (Reilly & Brown, 2006). Therefore, a firm's profitability will affect firm market performance positively. The positive correlation between profitability and firm market performance has been confirmed by previous empirical studies (Hoskisson, Johnson, & Moesel, 1994; Jacobson, 1987; Varaiya & Kerin, 1987).

Size

Firm size may also be a firm market performance determinant. On one hand, large firms tend to possess more resources and better chances in the capital market (Gupta, 1969; Baum, 1996). Further, an increase in size may enable a firm to gain economies of scale, more promotional opportunities, improved asset efficiency, better technology management and operational synergies. On the other hand, increased size may aggravate corporate red tape and cause dysfunction in managing personnel and other resources, thus resulting in a negative relationship between size and firm performance (Hannan & Freeman, 1989). Empirically, while Berman, Wicks, Kotha, and Jones (1999), Hoskisson (1987) and Keating (1997) indicated a positive association between firm size and firm performance, O'Neill, Saunders and MaCarthy (1989), Westphal (1998), Wu(2006) and Zajac (1990) revealed that there is mixed or no significant size effect on firm performance.

Dividend Policy

Dividend policy governs the distribution of firm earnings. According to Moyer et al. (2001), there are two theories supporting a positive relationship between dividend payout and firm performance. The "bird-in-the-hand" hypothesis posits that firms distributing dividends can reduce investor uncertainty, thereby lowering the required rate of return of future earnings and increasing firm value. Furthermore, agency theory suggests that dividend payouts can reduce agency costs by cutting the available amounts of retained earnings for management's discretionary use, thus improving firm performance in the capital market.

Conversely, firms not distributing cash dividends may signal good growth potential that may result in better than market expected future returns (Moyer et al., 2001). According to this growth signal hypothesis, a negative relationship between dividend payouts and firm performance is expected. Empirical findings have been mixed. While some supported a positive relationship between dividend payout and firm performance (Naranjo, Nimalendran, & Ryngaert, 1998), other studies found dividend payout's negative impact (Mooradian & Yang, 2001) or insignificant impact (Benartzi, Michaely, & Thaler, 1997; Christie, 1990) on firm value.

Business Diversification

According to Berger and Ofek (1995), business diversification has both value enhancing and reducing effects. On one hand, a well diversified firm could reduce the business risk and thus boost firm value in the capital market. On the other hand, inappropriate business diversification may result in the use of increased resources to undertake value-decreasing projects, cross-subsidies

of poor segments from better-performing segments, and misallocation of incentives among different segments in the firm (Berger & Ofek, 1995). Both positive (Keats & Hitt, 1988; Villalonga, 2004) and negative (Bettis, 1981; Comment & Jarrell, 1995; Lang & Stulz, 1994) impacts of business diversification on firm market performance were reported by empirical studies.

Geographical Diversification

To take advantage of their excessive resources, firms often pursue diversification geographically (Kor & Leblebici, 2005). Geographical diversification tends to mitigate business risk when operations in various geographical locations have different business cycles, thus helping increase firm performance in the capital market. However, a high level of geographical diversification could increase operation costs (Hitt, Hoskisson, & Kim, 1997), such as those due to logistics, trade barriers, culture heterogeneity, government regulation, etc. (Capar & Kotabe, 2003). Empirical evidence has been mixed. While Bodnar, Tang and Weintrop (1998), Tallman and Li (1996) reported a positive correlation between geographical diversification and firm performance, Denis, Denis and Yost (2002) demonstrated a negative relationship between the two. Alternatively, Errunza and Senbet (1984) found no significant impact of geographical diversification on firm performance.

To summarize, many firm-wise financial factors such as liquidity, financial leverage, activity, growth, profitability, size, dividend policy, business and geographical diversification have been discussed in finance literature as potential determinants that could affect firm market performance. Empirical results on those financial factors' impact on firm performance have been mostly mixed. To better understand how firm-wise financial factors may affect hotel firm performance in the capital market, it is necessary to undertake a comprehensive empirical investigation including all of the reviewed financial factors for consideration.

Firm Performance Measurement

A commonly used firm market performance measure is Tobin's Q, defined as the firm's market value divided by the replacement cost of its assets (Montgomery & Wernerfelt, 1988; Tobin, 1969). When the value of Tobin's Q is larger than one, a firm is worth more than the replacement cost, meaning excess profits could be earned for the owner or the shareholder. Researchers have developed different formulas to operationally measure Tobin's Q such as L-R Q (Lindenberg & Ross, 1981), Approximate Q (Chung & Pruitt, 1994) and Simple Q (Perfect & Wiles, 1994). In this study, the Proxy Q developed by Gompers, Ishii, and Metrick (2003) will be employed for its simplicity and

availability of data. A number of studies have adopted the Proxy Q because it can mitigate possible distortions from the estimation of replacement costs when calculating Tobin's Q (Clay, 2001, Kaplan & Zingales, 1997; Gompers et al., 2003, Tsai & Gu, 2007). Proxy Q is defined as:

$$Proxy\ Q = \frac{[ASSETS + EQUITY - (CE + DT)]}{ASSETS} \quad (1)$$

where :
ASSETS: the book value of ttal assets;
EQUITY: the market value of equity;
CE: the book value of common equity; and,
DT: deferred taxes

Research Methodology And Data Collection

The Model

A regression model (Equation 2) is proposed to investigate the relationship between firm-wise financial factors and hotel firm performance. Firm performance is the dependent variable and various firm-specific financial factors are the independent variables.

$$Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \varepsilon \quad (2)$$

Where:
Y : firm performance (FP);
$X_1 ... X_9$: liquidity (L), financial leverage (FL), activity (A), growth (G), profitability (P), size (S), dividend payout (D), business diversification (BD), geographical diversification (GD);
β_0: constant;
β_1- β_9: coefficients of $X_1 ... X_9$; and,
ε: error term.

In our study, liquidity is represented by the current ratio, which is current assets divided by current liabilities. Debt ratio, defined as total debt divided by total assets, represents financial leverage. Activity ratio is represented by the assets turnover ratio which is total sales divided by total assets. The growth variable is computed as the annual percentage change in total sales. Profit

margin, formulated as net income over total sales, is employed as the variable for profitablity. For the size variable, this study uses the logarithm of total assets.

Variables of dividend payout, business and geographical diversifications were measured dichotomously. If the observation (hotel firm/year) has dividend payout, or is associated with business and/or geographical diversification, the value of its respective variables is one. Otherwise, zero value will be assigned to the variable. For these three financial features, instead of asking how much they could contribute to firm performance, this study attempts to find out whether their presence has made significant differences in hotel firm market performance. Table 1 provides a summary of independent variables used in this study.

Table 1. Firm-wise Financial Factors and Data Representation

Financial Factor Name	**Data Representation**
Liquidity	Current ratio (current assets/current liabilities)
Financial Leverage	Debt ratio (debt/total assets)
Activity	Asset turnover ratio (total sales/total assets)
Growth	Sales growth (total sales $_T$/total sales $_{T-1}$-1)
Profitability	Profit margin (net income/total sales)
Dividend payout	1 for some dividend; 0 for none
Business diversification	1 for some diversification; 0 for none
Geographic diversification	1 for some diversification; 0 for none
Size	Log of total assets

Panel Regression

Panel data was used in this study. Panel data has both a cross-sectional and time-series dimension (Wooldridge, 2002). Regression with panel data is called panel regression, which can mitigate the measurement problems caused by omitted or unobservable variables (Wooldridge, 2002). Therefore, the regression results derived from panel data are more reliable and generalizeable than those derived from either cross-sectional or time series data alone.

Several types of panel data models have been proposed (Panel Data, 2006; Park, 2005; Yaffee, 2003). The Ordinary Least Square (OLS) constant coefficients model (also referred to as pooled regression model) is the simplest, assuming constant coefficients in both intercept and slopes for all cross-sectional and time-series observations (hotel firm/years in our study). A second

model, the fixed effects model, assumes that each cross-sectional unit (each hotel firm in our study) has constant slopes and variance (error term) but differs from each other by its unique intercept (Park, 2005). Operationally, the fixed effects model is equivalent to creating a set of dummy variables for each firm to control for the differences among firms. Another model, the random effects regression model (also called error component model) estimates different variance components (error term) for all cross-sectional units (hotel firms in out study) with assumptions of constant intercept and slopes (Park, 2005). The random effects model is operationally estimated by Generalized Least Squares (GLS) or Feasible Generalized Least Squares (FGLS) (Wooldridge, 2002).

The determination of the appropriate model among the OLS constant coefficient model, the fixed and random effects models is based on three tests. The Hausman Specification test is run first to determine a better model between the fixed and random effects models. A significant Hausman Specification test statistic would choose the fixed effects model and vice versa. Secondly, if the fixed effects model is selected, a follow-up Incremental F test is undertaken to compare the model with the OLS constant coefficient model. A significant Incremental F test statistic would indicate the fixed effects model as the better choice. Otherwise the OLS constant coefficient model would by chosen. Finally, if the random effects model was preferred by the Hausman Specification test, a follow-up Breusch-Pagan Lagrange Multiple test would be performed to determine whether the model is more appropriate than the OLS constant coefficient model. A significant Breusch-Pagan Lagrange Multiple test statistic would lead to the choice of the random effects model. Otherwise, the OLS constant coefficient model would be chosen.

Sample and Data

This study includes all active publicly traded US hotel firms with available data from Standard & Poor's COMPUSTAT between 2000 and 2004. The sample firm names and associated tickers were first collected through the primary North American Industry Classification System (NACIS) codes in COMPUSTAT. The hotel industry consists of the firms with NACIS code number 721110 (Hotels & Motels) and 721120 (Casino Hotels). COMPUSTAT has all necessary information to construct data of the firm financial factors and Proxy Q for this study. Software Stata 9.0 was employed to perform the analysis.

Assumption Checking

Panel regression analysis has assumptions similar to the normal multiple

regression technique (Hsiao, 2003). Wooldridge's (2002) Wald test was first performed to test autocorrelation of the panel data model. Due to its significant outcome ($F(1, 29) = 6.072$, $p < 0.05$), autoregressive models with 1 lag period - AR (1) were used in both the fixed effects and random effects models to mitigate this problem. The AR (1) panel model met all other necessary assumptions such as normality, linearity, homoscedesticity, and multicollinearity.

Results

Descriptive Statistics of Variables

Fifty-two hotel firms (including casino hotels) were initially identified through their NACIS code numbers between 2000 and 2004. A total of 151 observations (firm/year) from 32 hotels with complete data were retained in this study. The descriptive statistics of all continuous variables are presented in Table 2. Table 3 summarizes the frequencies and percentages of the dichotomous variables.

Table 2. Descriptive Statistics of the Continuous Variables

Variable	Number	Mean	Std. Dev.	Max	Min
Liquidity	151	1.205	0.925	5.995	0.253
Financial Leverage	151	0.466	0.185	0.950	0.102
Activity	151	0.591	0.558	4.734	0.087
Growth	151	0.056	0.252	1.317	-0.783
Profitability	151	0.003	0.167	0.300	-1.000
Size	151	20.843	1.608	23.261	17.618
Proxy Q	151	1.194	0.517	3.670	0.514

Note : Size is the logarithm of the total assets.

Table 3. Frequency and Percentages of the Dichotomous Variables

Variable	Frequency (Observations)	Percentage
Dividend Payout	48	0.318
Business Diversification	77	0.510
Geographical Diversification	44	0.291

During the data period, the hotel industry had an average current ratio at 1.205, with a maximum of 5.995 and a minimum of 0.253. A current ratio greater than one indicates that hotel firms in general had relative more current assets than current liabilities. The mean value of debt ratio for the sample was 0.466, indicating that hotels were approximately equally financed between equity and debt. The assets turnover of hotel firms averaged 0.591, implying that the industry's annual revenue was about sixty percent of the total investment in assets. The growth rate of hotel firms was 5.6 percent annually. This was moderately higher than the US annual gross domestic product (GDP)'s increase during the same period according to the data published by US Bureau of Economic Analysis. Hotel firms had an extremely low annual profit margin of 0.3 percent during the 5-year period, indicating its very weak ability to generate profits. The Proxy Q ranged from 0.514 to 3.670 with an average of 1.194. Therefore, hotels firms were worth slightly more than their replacement costs on average. Among the observations, 31.8 percent paid out dividends, 51 percent pursued business diversifications and 29.1 percent were engaged in geographical diversifications.

Estimated Fixed Effects Model

The fixed effects model was favored over the random effects model based on the significant Hausman Specification test statistic, Chi2= 57.95 ($p < 0.05$). The significant Incremental F test statistic, F= 2.62 ($p < 0.05$) further suggested that the fixed effects model was better than the OLS model. Therefore, the fixed effects model was selected as the final model for analysis. Table 4 shows the estimated fixed effect regression model. In this estimated model with AR (1) term, three independent variables, namely financial leverage, sales growth and size are significantly correlated with hotel firm performance.

Table 4. Results of Fixed Effects Regression Model

Item	Value
Liquidity	0.020 (0.36)
Financial Leverage	-1.396** (-2.24)
Activity	-0.105 (-0.78)
Growth	0.234* (1.76)
Profitability	-0.130 (-0.57)
Size	0.862** (3.30)

Constant	-15.919** (-4.88)
Geographical Diversification	-0.720 (-1.22)
Constant	-15.919** (-4.88)
R^2 (Adj-R^2)	0.773 (0.656)
Overall Significance Test	$F_{(9,79)}$=2.62**
Hausman Specification Test	$Chi^2_{(6)}$=57.95**
Incremental F Test	$F_{(31,79)}$=2.29**

Note ** and * represents the 0.05 and 0.10 significance levels, respectively.

Financial leverage, significant at the 0.05 level, is shown to have a negative effect on firm performance. Its negative relationship with hotel performance implies that debt usage during 2000 - 2004 in the hotel industry, at an average debt ratio of 0.466, passed the optimal level as suggested by the tradeoff capital structure theory (Moyer, et al., 2001). Therefore, lowering debt reliance in financing would be a desirable direction for the industry. In particular, for those hotels with debt ratios greater than 0.466, reducing their debt financing is likely to please investors interested in the industry and hence improve their firm value.

The significantly positive association between sales growth and market performance, at the 0.1 level, demonstrates that the capital market favored those hotels that were able to increase sales revenue during the 5-year period. Steady sales growth enables a firm to increase its market share, competing power, and synergy in a weak economic environment, thus helping sustain its value in the capital market. The 2000-2004 data period of our study experienced a market downturn which encompassed the stock market tumbling in both 2000 and 2001, the 9.11 terrorist attacks in 2001, and an economic recession.

The size variable is significant at the 0.05 level with a positive sign, suggesting that larger hotel firms were favored in the capital market vis-à-vis their small counterparts. Our results are consistent with those obtained by Berman, et al. (1999), Hoskisson (1987), and Keating (1997). Baum (1996) and Wu (2006) assert that large firms tend to perform better thanks to more available resources, better chances in the capital market, more promotional opportunities, better technology management and operational synergies, and economies of scale and improved asset efficiency. Our findings seem to

support the assertion. In particular, during the data period of this study, which was dominated by a relatively weak economy, large hotel firms' operational advantage in the above mentioned areas was more obvious and the capital market certainly noticed that when valuing hotel firms.

All other firm-specific financial factors of hotel firms were found to have no significant effect on hotel firm performance in our fixed effects model. The adjusted R square value is 65.6 percent, indicating that the model has captured approximately two thirds of the variation in hotel firm market performance during the 2000-2004 period.

Conclusions And Future Research

Our panel data regression analysis has resulted in a fixed effects model with three significant variables, namely financial leverage, sales growth, and size. Based on the model, the following conclusions can be drawn. Firstly, it is desirable for hotel firms to reduce their debt financing. Financial leverage was shown to negatively affect hotel firm market performance during the 2000-2004 period, suggesting that the costs of using debt out-weighted the benefits, or the debt use had already passed the optimal level. Therefore, borrowing less debt or issuing more equity would be preferred in the industry's financing.

In particular, the US hotel industry was operating in a challenging market environment during the 2000-2004 period, which encompassed the 9.11 terrorist events and an economic slowdown. The high business risk associated with tough market conditions may necessitate hotel firms to use lower debt leverage to bring down the financial risk. For hotels operating in less stable market segments, a prudent financing mix with low debt use is necessary for them to neutralize the high business risk and lower the overall risk. Lower risk will lower investors required rate of return for hotel investment, thus enhancing the hotel value in the capital market.

Secondly, our fixed effects model shows that the capital market rewarded those hotel firms with good sales growth. According to Smith Travel Research (J. Freitag, personal communication, September 8, 2004), from 2000 to 2003, available rooms of the US lodging industry increased from 4.2 million to 4.5 million, while occupancy steadily dropped from 63% to 58%. In the same period, revenue per available room (REVPAR) dropped from $53.50 to $48.39 and total sales revenue declined from $112.1 billion to $105.3 billion (see Table 5). Growing sales revenue without increasing the capacity is critical to

sustaining hotel firm value in a saturated lodging market. It is, however, extremely difficult to increase lodging revenue under such circumstances. Here, yield management, which combines the effects of occupancy and average daily rate (ADR) to maximize revenue (Kasavana & Brooks, 2001), could be the key to improving sales revenue from existing capacity. Yield management is a strategy to achieve optimal lodging revenue by maximizing guest room rates when demand exceeds supply and maximizing occupancy when supply exceeds demand (Jones & Hamilton, 1992). Hotel firms may adhere to this strategy to optimize their sales revenue and help improving firm performance in the capital market.

Table 5. U.S. Hotel Industry Major Statistics 2000-2003

Item	2000	2001	2002	2003
Revenues	$112.1 billion	$103.5 billion	$102.6 billion	$105.3 billion
RevPar	$53.50	$53.42	$49.42	$48.39
Occupancy Rate	63%	61.3%	59%	58%
Total Rooms	4.222 million	4.302 million	4.369 million	4.493 million

Source : Smith Travel Research (J. Freitag, personal communication, September 28, 2004)

Finally, the capital market obviously has a preference for larger hotel firms. This finding conveys important strategic implications for hoteliers. While expanding operations by building new properties may not be the best strategy to grow in size, especially during tough market times such as the 2000-2004 period under our analysis, hotel firms may consider mergers and acquisitions (M&A) as an alternative way to grow. In a saturated lodging market, such as the US market, restructuring via M&A may be an effective approach for the industry to become more efficient and avoid overcapacity. A hotel firm that can increase its operation size and market power by successfully engaging in M&A is likely to gain competitive advantages in economies of scale, promotional opportunities, assets efficiency, technology management, and operational synergies (Wu, 2006), thus improving its performance in the capital market.

A major limitation of this study is that the data period of the analysis was dominated by an economic downturn, although recovery was experienced in 2003 and 2004. Therefore, our results may possibly be influenced by this particular business cycle and the conclusions derived from the results may not be generalized to all times. It is advisable that future research may extend the time frame to include both economic downturn and upturn to neutralize

the impact of the business cycle, thus making the conclusions applicable across time periods.

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