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LIGHT DEBT USERS AND HEAVY DEBT USERS IN THE RESTAURANT INDUSTRY: A DISCRIMINANT ANALYSIS

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ABSTRACT

The purpose of this study is to investigate the wide diversity in financing of publicly traded restaurant firms in the United States. Fisher discriminant functions were estimated and firm features differentiating light debt users from heavy debt users were identified and analyzed. The study has found that managerial control is the most important contributor to the diversity in debt use in the restaurant industry. Size and type of operation also explain the diversity. The analysis shows that small full-service restaurant firms with low managerial ownership tend to use less debt, while large economy/buffet or fast-food restaurant firms under tight managerial control are likely to be heavy debt users.

Introduction

Capital structure is the composition of a firm's financing sources. Essentially, it is the mix of debt and equity. Capital structure has been a controversial topic in corporate finance. Modigliani and Miller (1958) propose the irrelevance of capital structure to firm value under some strict assumptions of a perfect capital market. However, with the assumptions relaxed, the no-tax and no-bankruptcy assumptions in particular, capital structure does matter in firm valuation and an optimal capital structure is possible (Baxter, 1967; Jensen & Meckling, 1976; DeAngelo & Masulis, 1980; Myers & Majluf, 1984; Weston & Brigham, 1990). Moyer, McGuigan, and Kretlow (1990) point out that capital structure may affect the market value of a firm. While the tax shield of debt increases firm value, bankruptcy and agency costs offset the benefits of debt. A change in capital structure may change the firm's tax shield, bankruptcy, and agency costs and hence its value. Capital structure decision is one of the centrally important decisions that face the management of a hospitality firm. Optimizing capital structure, as Andrew and Schmidgall (1993) point out, is essential to the long-run success of the hospitality firm.

The factors that determine capital structure have been well debated in finance literature. In hospitality research, however, capital structure has been insufficiently discussed. While several studies have explored the capital structure determinants of hotels (Kwansa, Johnson, & Olsen, 1987; Sheel, 1994), there is a lack of academic research on the capital structure of restaurant firms. In the restaurant industry, during the 1989–1991 recession in the United States, excessive debt use aggravated the financial hardship caused by sluggish sales. Many restaurants went bankrupt. Wood (1992) points out that many restaurant firms that had been able to borrow in the past may have eventually reached a juncture at which selling stocks became necessary. Capital structure has become a more important issue for the industry.

Within the restaurant industry, observed capital structures differ substantially across firms. While some restaurant firms use little debt, some are deeply indebted. At the end

of 1993, among the 75 public restaurant companies recorded in COMPUSTAT, the debt ratio, which is the ratio of debt to total assets, ranged from 6.82% to 145.2%. Two firms had debt ratios greater than one, due to excessive borrowing and cumulative operation losses. What factors have caused such a wide diversity in debt use within the restaurant industry? This study is designed to explain the financing diversity in the restaurant industry. In particular, it focuses on those firms heavily indebted versus those using little or no debt. The study attempts to identify factors that may discriminate between heavy debt users and light debt users. These factors, if identified, may provide an explanation to the diverse financing behaviors in the restaurant industry.

Background

In finance literature, commonly discussed capital structure determinants include assets structure, business risk, growth, size, profitability, and managerial control (Weston & Brigham, 1990). Myers (1984) suggests that profitable firms should have less cumulative need for external financing and that profitable firms in slow-growth industries should have low debt ratios. Titman and Wessels (1988) propose that large diversified firms tend to use more debt and profitable firms tend to use less debt. Scott (1972) concludes that industry, as a proxy of business risk, should have an influence on the capital structure. Business risk affects a firm's tolerance of financial risk and hence its financing policy. The effect of managerial control on capital structure is more complicated. According to Weston and Brigham (1990), when the management has voting control, it may choose to use more debt to avoid diluting the control. Its financing preference, however, may switch to new equity when the firm is financially weak and is facing default risk.

Empirically, Scott and Martin (1975) found that capital structure differed across industries and that large firms used more debt than small firms. In Gupta's (1969) regression analysis, growth companies were found to have higher debt to assets ratios. In a cross-nation regression analysis, Toy, Stonehill, Remmers, Wright, and Beekhuisen (1974) found that growth was positively related to debt ratio and that profitability had a negative impact on corporate debt use. The multivariate regression analysis by Titman and Wessels (1988) found that profitability led to lower debt leverage, but the impact of growth on debt use was insignificant. Friend and Lang (1988) found that debt ratios of publicly held firms increased with the fraction of stocks owned by managerial insiders.

Previous empirical studies on capital structure have focused on large firms in manufacturing industries. Few empirical studies on capital structure have been documented in hospitality research. Kwansa, Johnson, and Olsen (1987) found no significant relationship between sample hotels' debt/equity ratios and all the explanatory variables including growth, profitability, and size in their across-firm model. On the other hand, in Sheel's (1994) regression model, which used samples of hotel firms and manufacturing firms, all independent variables, including size, profitability, and operating risk, were significantly related to the debt to assets ratio. In a comparative study on financial ratios of different types of restaurant firms, Gu and McCool (1993/1994) found significant differences in debt ratios across different types of restaurant firms. Their study, however, did not investigate the factors that had caused the difference. An investigation of the

causes of the financing diversity in the restaurant industry—a nonmanufacturing industry mainly composed of small firms—will not only enhance a weak link in hospitality research but also enrich the empirical literature on capital structure in general.

Methodology

Most of the previous empirical studies on capital structure, including the two on the hotel industry's capital structure, used linear regression models to examine the relationship between debt use and a variety of factors. Many studies failed to find a linear relationship between debt use and some or all of the factors. The nonexistence of a linear relationship, however, does not necessarily mean that there is no relationship between debt use and those factors. Furthermore, a critical assumption of regression is the normality of data. Business data, however, are often strongly skewed (Summer & Peters, 1974). With severe data non-normality present, linear regression may lose its robustness and regression results can be distorted (Kleinbaum, Kupper, & Muller, 1988).

Different from previous empirical studies, this study uses the multivariate Fisher discriminant function (Fisher, 1936) to identify and analyze the variables that distinguish light-debt restaurant firms from heavy-debt restaurant firms. The Fisher function does not have to make any distributional assumptions. Research has shown that although dummy variables do not follow a normal distribution, their use in Fisher discriminant functions can help improve the classification (Afifi & Clark, 1984). Goldstein and Dillon (1978) illustrate the use of discrete variables in discriminant models. In this study, if the two groups of restaurant firms are found to have some distinct features that distinguish them from each other, these features may be the relevant factors that affect their financing decisions and may explain the wide financing diversity in the industry. Whether debt use is linearly related to the factors is unimportant and is not the interest of the study.

The Fisher discriminant function for classifying restaurant firms into heavy and light debt users is denoted as:

$$Z = a_1X_1 + a_2X_2 + \ldots + a_pX_p$$

where Z is a linear combination of all classifying variables or features—X_1 through X_p. The value of the dividing point of the two groups is calculated as:

$$C = \frac{(\bar{Z}_1 + \bar{Z}_2)}{2}$$

where $\bar{Z}_1$ is the mean Z value of the light-debt group and $\bar{Z}_2$, the mean Z value of the heavy-debt group. After the coefficients, a_1 through a_p, are estimated and the discriminant function is established, the Z value of any restaurant firm can be calculated and compared with the dividing point C. The classification depends on whether the Z value is greater or

less than the dividing point C. To measure how far apart the two groups are in terms of Z values, Mahalanobis Distance, D^2, is computed as:

$$D^2 = \frac{(\bar{Z}_1 - \bar{Z}_2)^2}{S_z^2}$$

where S_z^2 is the pooled sample variance of Z. Theoretically, the estimated Fisher discriminant function selects the coefficients, a_1 through a_p, so that D^2 will have the maximum value. The null hypothesis that D^2 is zero can be tested to see if the model is significant in classifying the two groups.

In a two-group discriminant analysis, the sample sizes of the groups typically differ. For instance, in the depression discriminant case study by Afifi and Clark (1984), the sizes of the depressed and nondepressed sample groups were 69 and 175 respectively. The discriminant analysis of children's risky behavior presented by Stevens (1992) had a sample of 12 high-risk children versus 26 low-risk children.

A discriminant model is a predictive model in the first place. In this study, it can predict the financing behavior of a restaurant firm based on its nonfinancing features. The model can also serve as an explanatory model because the classifying variables should bear some logical relationship to the dependent variable—debt use. This study is more interested in the explanatory power of a discriminant model, rather than its predictive power, since the purpose of the study is to explain the wide diversity in debt use in the restaurant industry.

Variables and Data

The estimating of the discriminant model started with five classifying factors, which are frequently discussed in financial literature, as capital structure determinant—growth, size, profitability, managerial control, and business risk. Sample restaurant firms' data of 1993, obtained from *COMPUSTAT* and *COMPACT DISCLOSURE*, were used for the study. Seventy-five publicly traded restaurant firms on the NYSE, ASE, and NASDAQ markets were included in the sample.

To measure debt use, the book-value debt ratio *(DR)* was used. It was a ratio of total liabilities, short-term and long-term liabilities combined, to total assets. Using a market-value debt ratio would be ideal because, as Solomon and Pringle (1980) point out, market value takes account of not only expected value but also risk. Short-term liabilities and bank loans, however, are not traded on the capital market. The unavailability of their market value makes the market-value *DR* unfeasible. Therefore, the book-value *DR* was used.

Weston and Brigham (1990) reported that the average debt ratio of U.S. companies was 0.56. Using 0.56 as a cutoff *DR*, the 75 sample restaurant firms were first classified into 22 heavy debt users ($DR > 0.56$) and 53 light debt users ($DR < 0.56$). A Fisher discriminant function was estimated based on the entire 75 sample firms.

The features of a restaurant firm with a *DR* of 0.57 may not be very different from those of a restaurant firm with a *DR* of 0.55. This study is more interested in those firms with wide difference in debt use in the industry—those heavily relying on debt and those using little or no debt—and their distinct features. Therefore, it further sorted out firms with debt exceeding two-thirds of the financing ($DR > 0.67$) as heavy debt users (12 firms) and those with debt less than one-third of total financing ($DR < 0.33$) as light debt users (32 firms). A second Fisher discriminant function was estimated for the 44-firm sample. Table 1 provides a list of the sample restaurant firms and their classifications. Table 2 shows the types of the restaurant firms under different classifications.

The operation types of restaurant firms served as a proxy for business risk. The sample restaurant firms were divided into four categories of operations: full-service upscale, full-service family, economy/buffet, and fast-food. Operation types were determined based on descriptions in the *COMPACT DISCLOSURE* and confirmed by phone calls to companies when descriptions were vague. Three dummy variables, *T1*, *T2*, and *T3*, were used to represent full-service upscale, full-service family, and economy/buffet operations respectively. Fast-food restaurant firms were assigned zero value for all the three dummy variables.

In investigating the relationship between debt use and profitability, previous studies used operating profits or earnings before interest and taxes as the profitability variable (Toy et al., 1974; Titman & Wessels, 1988). In reality, many firms use operation-generated cash flow as an internal financing source to substitute for debt. Therefore, this study used the ratio of operating cash flow to total assets *(OCF)* as the profitability variable. *OCF* was lagged for a year, as a firm's financing decision was likely to be affected by its previous operating results. Total assets *(TA)* and percentage of managerial ownership *(MC)* were used as size and managerial control variables. The growth variable *(G)* was represented by the three-year growth of sales (1991–1993).

The nondummy independent variables were checked for normality in normal probability plots. While *OCF* and *MC* appeared normal, strong skewness was observed in the distributions of *G* (with a mean of 0.254 and a median of 0.119) and *TA* (with a mean of $347 million and a median of $75.9 million). The non-normality of the data justified the use of discriminant analysis. Table 3 and Table 4 present the means of the nondummy independent variables of the light-debt and heavy-debt firms and the p values of the t-tests on their differences.

Estimated Fisher Models

Statistical program SAS was used for estimating Fisher discriminant models. Discriminant stepwise procedure was employed for selecting the variables that could contribute to the differentiation of the two groups. Statistical significance levels for a variable to enter the model (F-to enter) and to be removed from the model (F-to remove) were set at $\alpha = 0.15$, as suggested by Afifi and Clark (1984). Therefore, variables with p values less than 0.15 would be retained.

Table 1
Sample Restaurant Firms and Classification

2	American Restaurant Partners	*		Apple South	
1	Applebee's International		1	Ark Restaurant Corp.	
1	Au Bon Pain Co.		1	Back Bay Restaurant Group	
1	Bayport Restaurant Group			Benihana National Corp.	
1	Bertucci's		1	Bob Evans Farms Inc.	
	Boston Chicken	*	1	Brinker International	
1	Buffets Inc.			Chart House Enterprises	
1	Checkers Drive In Restaurants		1	Cheesecake Factory	
1	Cracker Bl Old Century		1	D F & R Restaurants	
2	Daka International	*	2	Davco Restaurants	*
1	El Chico Restaurants			Family Steak Houses of FL	*
2	Flagstar	*	2	Foodmaker	*
1	Fresh Choice			Cooker Restaurant Corp.	
2	Furr's/Bishop's	*		Ground Round Restaurants	*
1	Hamburger Hamlet Restaurants		1	Hometown Buffet	
	IHOP Corp.	*		International Dairy Queen	
	J B's Restaurants Inc.			Karcher Entrs (Carl Jr's)	*
	Krystal Co.	*	1	Lone Star Steakhouse	
1	Landry's Seafood Restaurants		1	Longhorn Steaks	
1	Luby's Cafeterias		2	Main Street Main Inc.	*
	Marcus Corp.			Max & Erma's Restaurants	
	McDonald's Corp.			Miami Subs	
2	Morgan's Foods	*		Morrison Restaurants Inc.	
1	Nathan's Famous			National Pizza Co.	*
	O Charley's			On The Border Cafes	
1	Outback Steakhouse		1	Panchos Mexican Buffet	
1	Papa John's International			Perkins Family Restaurants	
	Piccadilly Cafeterias Inc.		2	Pollo Tropical	*
	Quantum Restaurant Group			Rally's Hamburgers	*
1	Ryan's Family Steak Houses		1	Sbarro Inc.	
2	Shoney's Inc.	*	1	Showbiz Pizza Time	
1	Sizzler International		1	Sonic Corp.	
1	Spaghetti Warehouse			Stacey's Buffet	
	T P I Enterprises	*	1	Taco Cabana	
1	Uno Restaurant Corp.			Vicorp Restaurants Inc.	
	Volunteer Capital Corp.	*	2	W S M P Inc.	*
1	Wall Street Deli			Wendy's International	
2	Consolidated Products Inc.	*			

Note: With cutoff $DR = 0.56$ (75 firms), firms followed by * are heavy debt users. The rest are light debt users. With cutoff DR set at $DR < 0.33$ and $DR > 0.67$ (44 firms), firms preceded by *1* are light debt users and firms preceded by 2 are heavy debt users. The rest are medium debt users.

Table 2
Types of Restaurant Firms under Different Debt User Classifications

Type	Light Debt User ($DR < 0.56$)	Heavy Debt Users ($DR > 0.56$)	Light Debt Users ($DR < 0.33$)	Heavy Debt Users ($DR > 0.67$)
Full-service upscale	12	2	5	1
Full-service family	18	2	13	1
Economy/buffet	13	7	8	4
Fast-food	10	11	6	6
Total	53	22	32	12

Note: Among the 31 firms with *DRs* between 0.33 and 0.67, the numbers of full-service upscale, full-service family, economy/buffet, and fast-food restaurant firms are 8, 6, 8, and 9 respectively.

Table 3
Mean Values of Nondummy Variables of Light Debt Users (75-Firm Sample)

Nondummy Variables	Light Debt Users (53)	Heavy Debt Users (22)	*p* Value (t-test)
OCF (%)	15.10	18.08	0.4604
Growth (%)	21.53	27.00	0.5845
TA ($Millions)	317.15	360.47	0.9038
MC (%)	29.27	45.24	0.0017

Both sample classification error and jackknife error rates were calculated. The sample error rate is the percent of misclassification of all the sample firms used in the estimation by the model. The jackknife error rate is for cross-validation. The jackknife procedure first excludes one observation and computes the discriminant function from the remaining observations. Then the excluded observation is classified by the estimated discriminant function. The procedure is repeated for each observation. It provides nearly unbiased estimators for the classification (Afifi & Clark, 1984).

For the 75-firm sample, the discriminant stepwise procedure resulted in a Fisher model containing *MC*, *T1*, and *T2* as classifying variables. For the 44-firm sample, *MC*, *TA*, *T1*, and *T2* were retained in the model. Presented below are the estimated Fisher functions with the dividing point *C*, error rates, Mahalanobis Distance D^2, and the *F* and *p* values of the models and individual variables. The estimated Fisher discriminant function from the 75-firm sample is:

Table 4
Mean Values of Nondummy Variables of Light Debt Users (44-Firm Sample)

Nondummy Variables	Light Debt Users (32)	Heavy Debt Users (12)	*p* Value (t-test)
OCF (%)	18.52	18.11	0.9483
Growth (%)	35.04	26.25	0.5828
TA ($Millions)	132.54	455.28	0.0659
MC (%)	29.89	53.03	0.0012

Note: The average *OCF*, Growth, *TA*, and *MC* of the firms left out of the sample are 15.51%, 15.11%, 544.67, and 30.76% respectively. The large average *TA* is due to McDonald's Corp. Without McDonald's Corp., the average *TA* would be 157.34.

$Z = -0.047MC + 1.958T1 + 1.861T2$ (Model 1)

F:	10.592	3.994	6.283
p:	0.002	0.049	0.015

$C = 1.039$
$D^2 = 1.48$
F (model) = 10.17
p (model) < 0.01 (df = 3,71)
Error rates: 26.7% (sample) and 28% (jackknife)

The Fisher discriminant model from the 44 sample firms is:
$Z = -0.060MC - 0.0017TA + 2.073T1 + 2.384T2$ (Model 2)

F:	12.319	3.839	2.370	2.486
p:	0.001	0.057	0.131	0.123

$C = 2.163$
$D^2 = 2.86$
F (model) = 16.57
p (model) < 0.01 (df = 4,39)
Error rate: 11.4% (sample) and 13.6% (jackknife)

The computed dividing *C* values of Models 1 and 2 are 1.039 and 2.163 respectively. A restaurant firm with a *Z* value greater than *C* would be classified as a light debt user. A restaurant firm with a *Z* value less than *C* would be classified into the heavy-debt group. Both models are significant at the 0.01 level with high *F* values. Therefore, the null hypothesis that Mahalanobis Distance D^2 is zero can be rejected. The D^2 and *F* of Model 2 are much greater than those of Model 1. D^2 is the squared distance between the means of the standardized value of Z. A larger D^2 indicates that it is easier to discriminate between the two groups (Afifi & Clark, 1984). The higher D^2 value of Model 2 suggests its greater discriminating power, which is confirmed by the model's lower error rates, 11.4%

(sample) and 13.6% (jackknife). In contrast with Model 2, Model 1 makes more misclassifications with 20 sample errors (26.7%) and 21 jackknife errors (28%).

The *p* value under each variable indicates the significance level of its marginal contribution to the classification. Model 1 has three retained classifying variables, *MC*, *T1*, and *T2*, all significant at the 0.05 level. The other four variables, *TA*, *OCF*, *G*, and *T3*, not significant at the 0.15 level, were excluded by the stepwise procedure. In Model 2, besides *MC*, *T1*, and *T2*, *TA* was retained as a classifying variable. The other three variables, *G*, *OCF*, and *T3*, were excluded for not meeting the $\alpha = 0.15$ requirement. In Model 2, while MC is significant at the 0.001 level and *TA*, significant at the 0.1 level, *T1* and *T2* are not significant at the 0.1 level. They were retained in the model because of the $\alpha = 0.15$ rule. Goldstein and Dillon (1978) suggest that liberal inclusion α levels, between 0.15 and 0.25, should be considered in the discriminant stepwise procedure and the formal probabilistic stopping rules should not be interpreted as stringent tolerances. Rigid stopping rules could significantly reduce the classifying power of a discriminant model. For the 44-firm sample, an inclusion rule of $\alpha = 0.1$ would have excluded *T1* and *T2* and reduced the D^2 to 1.78. The sample and jackknife error rates would have risen to 27.3%.

In comparison with Model 1, Model 2's higher accuracy does not necessarily mean that it is a superior model. It is not surprising that Model 2 has lower error rates. The stricter screening criterion of light and heavy debt users for the 44-firm sample makes the two groups more distinguishable. Besides, *T1* and *T2*, not significant at the 0.1 level, weaken the explanatory power of the model. On the other hand, in the 75-firm sample, the "grey area" of sample firms with *DRs* around 56 percent makes it hard for Model 1 to discriminate between the two groups. The high error rates of Model 1 are not necessarily indicative of an inferior model. It is not uncommon that discriminant functions with significant D^2 have error rates around 25%. For example, the discriminant function of the depression study by Afifi and Clark (1984) has an error rate of 28.9%. The discriminant model for children's riskiness presented by Stevens (1992) has an error rate of 26.3%. Further, all the retained variables in Model 1 are significant at the 0.05 level, making it more convincing when used for explanatory purposes. The higher error rate of Model 1 does not necessarily suggest that Model 1 is an inferior model.

Model accuracy and error rates are not of major interest in this study. This study does not pursue a discriminant model with a minimum error rate. Its purpose is to use the variables retained in the model to explain the diversity in debt use in the restaurant industry. In particular, the 44-firm sample is meant for analyzing firms with even wider diversity in debt use—those with *DRs* greater than 0.67 versus those with *DRs* less than 0.33 in the restaurant industry, rather than for achieving higher accuracy.

Discussion of the Results

The signs and statistical significance of individual variables of the estimated model deserve attention. Afifi and Clark (1984) point out that for a Fisher discriminant function, comparisons of the variables that have positive coefficients with those that have negative coefficients can be revealing. The sign of the coefficient of the Fisher discriminant

function is useful in indicating the direction in which each variable contributes to the classification. In the two estimated models, the negative sign of the coefficient of *MC* suggests that a restaurant firm with large managerial ownership will have a small *Z* value and is likely to belong to the heavy-debt group. The negative sign of *TA*'s coefficient in Model 2 suggests that a large restaurant firm will incline to be a heavy debt user. On the other hand, the positive signs of *T1* and *T2* in both models imply that restaurant firms with full-service upscale or full-service family operations will be associated with large *Z* values and are likely to be classified as light debt users.

The high statistical significance level of *MC* in both models, as indicated by its small *p* and large *F*, suggests the dominant influence of managerial control on the debt/equity financing decision of a restaurant firm. Firm size, as suggested by Model 2, can be an important factor in a restaurant firm's use of extremely low or high levels of debt. Type of operation, retained in both models, also plays a role in a restaurant firm's debt use.

The result about managerial control confirms Friend and Lang's study (1988) that found debt of publicly held firms increased with the fraction of stocks owned by the managerial insiders. A plausible explanation of the impact of managerial control is that, as Weston and Brigham (1990) suggest, when the management has voting control, it may choose to use more debt, rather than new equity, to avoid diluting the control. The significant role played by *MC* in restaurant financing is probably due to a particularity of the restaurant industry: It is mainly composed of small firms. Among the 75 restaurant firms, only 5 had assets over $500 million. The majority, 42 firms (56%), were small firms with total assets less than $100 million. For managers, achieving voting control in a small firm is easier than in a large firm. The small-firm feature of the restaurant industry may have made the managerial insiders more control-sensitive. When managers own a large percentage of stocks, they may become unwilling to issue new equity to weaken their voting control. Therefore, debt is preferred.

The inclusion of *TA* in Model 2 is consistent with the results of Scott and Martin's (1975) study that found firm size positively related to debt use. Compared with small firms, large firms have easier access to bank loans or other borrowing sources. Therefore, large firms may tend to use more debt. The exclusion of *TA* from Model 1 does not negate the effect of size on debt use. In the 75-firm sample for Model 1, the light debt users have average total assets of $317.5 million, not statistically different from that of the heavy-debt group, $360.47 million (Table 3). In the 44-firm sample for Model 2, the average size of the light-debt group is $132.54 million, significantly smaller than the heavy-debt group's $455.28 million (Table 4). The fact that *TA* is excluded from Model 1 but included in Model 2 suggests that large restaurant firms are likely to rely heavily on debt financing, while small restaurant firms use less debt, probably due to limited debt-financing opportunities.

The inclusion of the two type variables in both models suggests that full-service restaurant firms, either upscale or family type, tend to use less debt, contradicting Gu and McCool's (1993/1994) findings that full-service upscale restaurant firms use more debt. Gu and McCool's study used restaurant firms' data from 1984 through 1988. The inconsistency suggests that there might be a shift in the financing policy of this group after the

1989–1991 recession. Full-service upscale restaurant firms were more adversely affected by the recession than other types of restaurants. According to Riehle (1991), in 1990, this group's operating cash flow was 7.4% of sales revenue, the lowest of all sectors in the industry, whereas its interest expense was 1.2% of sales revenue, the highest of the industry. The recession may have changed the group's financing preference from debt to equity.

Financing theory has suggested that firms exposed to higher business risk may want to use less debt to reduce further exposure to financial risk (Weston & Brigham, 1990; Martin et al., 1990; Rao, 1992). Previous evidence indicates that firms generating stable cash flows over the business cycle tend to have higher debt ratios (Moyer et al., 1990). Targget (1986) points out that debt-financing proportion and perceived business risk move in opposite directions in the United States. The high likelihood of full-service restaurant firms' being classified as light debt users found in this study suggests that these firms may have higher perceived business risk due to the recession and hence have changed their financing behavior.

The estimated discriminant models show that growth does not play a role in differentiating debt users in the restaurant industry. The findings confirm the results of Titman and Wessels (1988) but negate what was found by Toy, Stonehill, Remmers, Wright, and Beekhuisen (1974). The exclusion of the growth variable from both models suggests that restaurant firms have not wanted to or been able to excessively rely on debt to finance their growth since the 1989–1991 recession. As Wood (1992) points out, many restaurant firms, small ones in particular, have already reached their debt capacity. Increased debt financing for growth may have been matched by new equity issuance and retention, thus making the debt proportion unchanged and the impact of growth on debt ratio insignificant. In fact, most of the restaurant firms retain their earnings as an internal financing source. In 1993, of the 75 restaurant firms in the sample, only 15 paid dividends. Most of them were penny dividends.

The exclusion of *OCF* from the Fisher discriminant models was not a surprise, since there was no significant difference in the mean *OCF* ratios between different groups of debt users (Tables 3 & 4). Finance theory has suggested that profitable firms may use less debt because operating cash flow, an internal financing source, can substitute for external borrowing. Previous empirical studies (Toy et al., 1974; Titman & Wessels, 1988) found profitability negatively related to debt use in manufacturing industries, because a significant gap in operating profits existed and higher operating profits were found in low-debt firms. In this study, the two groups had mean *OCF* ratios not significantly different from each other. The similarity in their mean *OCFs* could make the impact of *OCF* on debt use homogenous and result in its insignificant role in classifying debt users.

The significant negative relationship between profitability and debt use observed in other industries is not likely to occur in the restaurant industry because of its fast growth. The 75 restaurant firms had an average sales growth of 25.4% from 1991 through 1993, much faster than the nation's GDP growth. Myers (1984) proposes that profitable firms in a *slow-growth* industry are likely to use less debt because of lower cumulative need for

external borrowing. In a fast-growing restaurant industry, the need for financing expansion may have mitigated the impact of profitability on debt use.

Summary and Future Research

In this study, Fisher discriminant functions for differentiating light debt users from heavy debt users in the restaurant industry were estimated by the discriminant stepwise procedure. Of the seven variables for initial estimation, five variables—management control, size, and two type variables—were retained in at least one of the two models. The estimated discriminant functions show that managerial control is the most important factor that affects debt use in the restaurant industry. Firm size and type of operation also contribute to the diversity in debt use.

The estimated discriminant model predicts that small full-service restaurant firms with low managerial ownership are likely to be light debt users. On the other hand, large economy/buffet or fast-food restaurant firms under tight managerial control are likely to be heavy debt users. The former are likely to use little debt probably because of higher perceived business risk, limited access to borrowing, and a lack of managerial interest in controlling the firm. The latter are likely to use more debt due to lower perceived business risk, easy access to borrowing, and managerial reluctance to lose control.

The results of the study show that growth and profitability do not help explain the financing diversity in the restaurant industry. While the significant impact of managerial ownership on debt use may result from the small-firm nature of the industry, the insignificant role of growth on debt is probably an indication of the industry's efforts to avoid overreliance on debt for growth in the postrecession years. Operating cash flow fails to explain the diversity in debt use due to homogenous profitability across the groups. In addition, the financing needs for fast growth could have mitigated the impact of profitability on debt use.

This study has made an initial attempt in explaining the wide diversity in restaurant financing. It is by no means a thorough investigation of the financing behavior in the industry. Further research is needed. The two type variables included in Model 2 fall short of the 0.1 significance level. They are kept in the model because of a less stringent inclusion rule used in the stepwise discriminant analysis. Their role in explaining restaurant-financing behavior should be further confirmed.

In future studies, different variables may be used. For example, operating leverage may be used as a better proxy of business risk than type of operation, if fixed costs can be separated from variable costs. The results of this study should be verified by multiple-year data of restaurant firms. Adding more candidate variables, such as corporate income taxes and collateral value of restaurant assets, may increase the predictive and explanatory power of a discriminant model. Using a partial market-value leverage ratio, instead of a pure book-value *DR*, also may improve the model. The market value of the traded bonds of a firm can be used as a part of the total liabilities to derive a partial market-value ratio. With more variables, more years of observations, and partial

market-value debt ratios, a new discriminant function may provide a better explanation of the diversity of the capital structure in the restaurant industry.

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