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FACTORS THAT IMPACT UNSYSTEMATIC RISK IN THE U.S. RESTAURANT INDUSTRY

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ABSTRACT. The purpose of this research is to explore the relationship between restaurant management factors and the unsystematic risk portion of restaurant stock returns. The riskiness of the restaurant business has been brought to the forefront of popular culture through a number of reality television shows. Although the riskiness of the business overall has been exaggerated, these shows highlight the importance of the ability of the owner-manager. We examine three critical areas of restaurant management, including financial management, operations management, and firm size, and find that all are significantly related to a firm's unsystematic risk.

INTRODUCTION

There is currently a debate in both the academic literature and popular culture about the riskiness of the restaurant business (Parsa, Self, Njite, & King, 2005). Much of this attention has understandably focused on the ability to continue the operation of a business that is headed toward failure. The riskiness of the restaurant business has been highlighted on a number of reality television shows such as *Restaurant Impossible* and *Kitchen Nightmares*. A commercial that aired during one restaurant reality show stated that approximately 90% of restaurants fail before the end of their first year of operation (Burnett, Silverman, and Riesenberg, 2003). This finding, however, has been largely discredited by both the National Restaurant Association and published research (Parsa et al. 2005).

Despite the exaggerated failure rates often reported by the media, the restaurant business

is one that can change rapidly. In their research about publicly traded restaurant firm performance, Kim and Gu (2003) analyzed a sample of 41 full-service restaurants, 13 economy/buffet restaurants, and 14 fast-food restaurants for the years 1996–2000. We conducted an informal “survival” analysis and found that nine (22%) of the full-service were no longer in business only 5 years later. Two other firms were purchased and another four firms became privately owned. Three (23%) of the economy/buffet restaurants went out of business; two were purchased and two others became privately owned. None of the fast-food restaurants are out of business, but three became privately owned and one was purchased by another company.

One of the basic problems is the lack of agreement about what it means to fail in the restaurant business (or any business). Failure could include a circumstance in which the

owner/manager merely quits/disbands or when a lender forecloses on the property. An owner could move the restaurant, be bought out or taken over, or merge with another firm. Researchers have attempted to avoid this pitfall by using bankruptcy statistics (Gu, 2002; Haswell & Holmes, 1989). However, even this methodology cannot completely address the issue because restaurants can go out of business without filing bankruptcy and some bankruptcy filers can reorganize and reemerge as a new restaurant.

The objective of this article is not to examine or define restaurant business failure or bankruptcy, but to more closely examine the factors that make the restaurant business risky. Although financial research often uses standard deviation of stock returns as a measure of risk, this is a measure of total risk that includes systematic risk, which includes factors affecting all firms and idiosyncratic risk, which pertains to individual firms. Thus, using a measure of total risk would include a certain amount of risk that management could not control.

In this article we examine the risk of publicly traded restaurant firms by focusing on the unsystematic portion of the total risk of return—factors that can be diversified away when added to a diversified portfolio—but that can make that particular investment risky on its own. One of the major elements of the unsystematic risk—something we call managerial risk—involves the experience, judgment, and skills of the owner/manager. We expect to find a significant relationship between this risk factor and the unsystematic risk of restaurant returns. The next section will discuss the literature pertinent to total risk and its components as well as the importance of managerial competence and efficiency in the operation of a restaurant firm.

LITERATURE REVIEW

Much progress has been made in attempting to explain stock returns in the finance literature. Sharpe (1964) and Lintner (1965) worked to develop the Capital Asset Pricing Model (CAPM). Their univariate model utilizes

the return of the market portfolio to attempt to explain the variance in stock returns. The coefficient in the model explains the systematic (market-related) risk of the security. The market factor, however, only explains the systematic risk. The other variance left unexplained by CAPM is the unsystematic risk of the stock's returns.

Over time however, this univariate explanation of the variance in stock returns was shown to vary in its explanatory power. Accordingly, Fama and French (1992) utilized a multivariate model to help explain the variance in stock returns. They include numerous variables simultaneously, such as leverage, historical returns, and dividend yield. However, the most significant explanatory variables are the market factor, size (differences in market capitalization), and value (differences in the market value to book value ratio). Thus, the final model by Fama and French (1992) makes use of these three variables.

Our focus, however, is on the unsystematic risk of returns. These would be factors that would be considered indigenous to individual firms in the restaurant industry. There are many things that affect restaurant performance, including size, franchise affiliation, location, and type of service or theme. However, one factor appears to play an overriding role in small business and restaurant failure literature: management competence and expertise.

The management competence factor is cited by Haswell and Holmes (1989) with regard to business failures in Australia. Although the estimates of failure due to management inadequacy are difficult to measure, they appear to be surprisingly high. A study by Perry and Pendleton (1983) in Australia estimated that up to 90% of small business failures are attributable to management problems. A pilot study by Williams (1975) estimated that approximately 60% of business failures are due to a lack of management expertise. A later study by Peacock, Palmieri, and Spatharos (1986) also found that most business failures in southern Australia were attributable to management. An examination of Australian Bankruptcy reports in the mid 1980s

indicates that lack of management experience was a “contributing” or “major contributing” factor of nearly 50% of bankruptcies between 1983 and 1986.

The most recent and comprehensive study regarding restaurant failure was completed by Parsa et al. (2005). Using a sample from the Columbus, Ohio, area, they found that approximately 30% of restaurants fail in the first year of operation. The other part of their study is a qualitative analysis that included interviews with restaurateurs to explore the reasons for failure.

Parsa et al. (2005) divided the reasons for failure into major categories. One of the categories is the size of the firm. As discussed by Richardson (1991), large firms have an advantage over smaller firms in that there tends to be a positive correlation between size and survivability. This should not be surprising in that larger firms tend to have more financial resources and access to capital than smaller firms. Additionally, Richardson (1991) believed that financial institutions have a more negative attitude toward smaller firms because they perceive large firms as safer. Gaskill, Van Auken, and Manning (1993) argued that even though small firms are often poised for growth, rapid growth can lead to failure because of various financial pressures. Some of these include high food and beverage costs and debt. Blue, Cheatham, and Rushing (1989) argued that as small firms grow there is increased financial risk to the operation, which makes failure more likely. Thus small firms may be associated with more unsystematic risk.

Perhaps the most significant factor listed by Parsa et al. (2005) was labeled as “internal.” As described by Haswell and Holmes (1989), this really relates to management’s ability (or lack thereof). Competence and experience play a large role in many other areas such as financing, record keeping, culture, ability to get good advice, product quality, underestimating competition, and many others.

Another critical factor for success has emerged in the literature—the skill set of the owner-manager (Parsa et al., 2005). This entailed “subfactors” such as training, financial

management, customer relations, and product quality. Unsuccessful managers described their failures as being related to a lack of knowledge and skills, management of employees (turn-over), and undercapitalization. Although factors such as training, education, and industry experience should play important roles in the success of a firm, these factors are not typically available to researchers utilizing currently available databases. In terms of financial management specifically, Parsa et al. (2005) argued that the initial lack of capital is not necessarily a cause for failure. However, the lack of *ongoing* capital management is a much more critical factor in restaurant failure.

Camillo, Connolly, and Kim (2008) completed a case study of nine successful independent restaurants and nine failed restaurant. As part of their research, they consider what, in their opinion, are critical success factors. One of their categories is titled “resources and capabilities.” Some areas to consider in determining success include firm size, financial capital, financial management and profitability, internal controls, financial risk, and efficiency. Their findings confirm previous findings with regard to overconfidence and mental unsuitability as contributing to failure.

A study by Youn and Gu (2010) attempted to develop a predictive model for restaurant bankruptcies. They utilized variables that are reflective of management’s financial acumen with regard to restaurant management. Variables include measures of liquidity, leverage, profitability, and efficiency. Liquidity would typically include competent management of working capital and profitability would include the proper management of large expenses such as food and labor costs. Their models are robust and utilize the financial management variables found in previous published research (Kim and Gu, 2006a, 2006b).

There have been a number of studies that examine risk in various sectors of the hospitality industry. For example, Borde (1998) examined factors that affect total and systematic risk such as liquidity, growth in earnings, and leverage. He did not consider unsystematic risk at all.

Most of the studies about risk in the hospitality industry primarily involve the relationship between risk and return. The study by Kim and Gu (2003) is fairly typical of this type of research; they examine the risk-adjusted performance of restaurant firms. Mao and Gu (2007) performed a similar study of restaurant performance during an economic downturn. Madanoglu, Lee, and Kwansa (2008) performed a risk-return analysis that compares casual restaurants to fast-food restaurants.

In conclusion, we believe that a number of factors contribute to the unsystematic risk of restaurant firm returns including size, management of working capital, and the management of key restaurant expenses such as cost of goods sold and total operating expenses. Cost of goods sold is defined by COMPUSTAT as any direct expenses used to produce an item. This would include the cost of food and beverage and labor. Total operating expenses include cost of goods sold plus other line items such as marketing. In addition, the use of financial leverage is going to increase the risk of the firm (Emery & Finnerty, 1991) and contributes significantly to unsystematic risk as well.

HYPOTHESES, DATA, AND METHODOLOGY

This study attempts to assess the following research hypothesis: Managerial risk factors are significantly related to unsystematic risk. More specifically, we test the data based on the following alternative hypotheses:

- H_{1a}: Small firms are positively and significantly associated with unsystematic risk.
- H_{1b}: Firms with less working capital have higher unsystematic risk.
- H_{1c}: Firms with higher cost of goods sold have higher unsystematic risk.
- H_{1d}: Firms with higher operating expenses have higher unsystematic risk.
- H_{1e}: Firms with more financial leverage have higher unsystematic risk.

The measure of unsystematic risk was found via the CAPM. Specifically, we collected daily stock returns of publicly traded restaurant firms

from the Center for Research in Security Prices for each quarter of the years 2010 through 2012. These daily returns were subsequently regressed against the daily returns of the S&P 500 index for the same time period. The unexplained portion of the variance in the market model is the standard error. This represents the unsystematic portion of the return and is then used as the dependent variable in the empirical model (1) to test our hypotheses (Ferreira & Laux, 2007). The total number of different firms used in the sample is 38.

The remainder of the data was obtained through the COMPUSTAT database. Quarterly data was obtained for each quarter from 2010 to 2012. The mean firm size in terms of assets is \$1,844 million. Firms with assets of \$100 million were coded with a "1" to indicate a small firm, following Carpenter and Petersen (2002). The working capital variable is calculated as the ratio of working capital to total assets to capture the working capital management efficiency (Gill, Biger, & Mathur, 2010). The cost of goods sold variable is the ratio of cost of goods sold to total revenue, used to capture the managerial operating efficiency (Carpenter & Petersen, 2002). The operating expenses variable (which includes cost of goods sold) is total operating expenses divided by total revenue, which is used to capture a firm's overall profitability (Chen, 2007). Finally, financial leverage is the ratio of total liabilities to total assets for each firm (Hill, Perry, & Andes, 2011). Therefore, we have the full regression model as follows and perform a pooled regression analysis following prior studies (e.g., Dalbor & Upneja, 2002; Kim & Gu, 2003; Lee & Kim, 2009):

$$\begin{aligned} \text{Std. Dev.} = & \alpha_0 + \beta_1 \text{SMALL} + \beta_2 \text{WORKCAP} \\ & + \beta_3 \text{COGS} + \beta_4 \text{OPEX} \\ & + \beta_5 \text{LEV} + \varepsilon_i, \end{aligned} \quad (1)$$

where:

Std. Dev. = the standard deviation of the regressions using firm stock returns and the S&P 500 index returns,

TABLE 1. Summary Statistics

| Variable | N | Mean | Std. Deviation | Minimum | Maximum |
|----------|-----|---------|----------------|---------|---------|
| STDDEV | 412 | 0.0227 | 0.0164 | 0.0035 | 0.1736 |
| SMALL | 412 | 0.2087 | 0.4069 | 0 | 1 |
| WCRAT | 412 | -0.0048 | 0.155 | -0.4401 | 0.6903 |
| COGSRAT | 412 | 0.767 | 0.1224 | 0.2731 | 0.9643 |
| OPEXRAT | 412 | 0.8795 | 0.0736 | 0.6252 | 1.099 |
| LEVRAT | 412 | 0.6705 | 0.5872 | 0.1361 | 4.2243 |

Note. Table 1 shows the summary descriptive statistics for the dataset. STDDEV is the standard error of the regression models run against daily company stock returns against the returns of the S&P 500. SMALL is an indicator variable with a value of "1" for firms with assets totaling less than \$100 million. WCRAT is the ratio of working capital to total assets. COGSRAT is the ratio of cost of goods sold to total revenue. OPEXRAT is the ratio of total operating expenses to total revenue. LEVRAT is the ratio of total liabilities to total assets.

SMALL = an indicator variable wherein firms with less than \$100 million in assets are coded as 1,
 WORKCAP = the ratio of working capital to total assets,
 COGS = the ratio of the cost of goods sold to total revenue,
 OPEX = the ratio of total operating expenses to total revenue,
 LEV = the ratio of total liabilities to total assets,
 and ε_i = the error term of the regression with a standard normal distribution.

RESULTS

Summary statistics are shown in Table 1. Restaurant firms appear to be highly leveraged overall as suggested by a mean leverage ratio of .67. The working capital ratio is very low at .0048. A heavy cost structure is present given

the cost of goods sold ratio of .77 and a total operating expense ratio of .88.

As shown in Table 2, there are a number of highly significantly correlated variables in our dataset. The dependent variable in our regression, STDDEV, is highly correlated with each variable except for the leverage ratio variable.

We found support for H_{1a}. The regression results are presented in Table 3. The coefficient estimate for SMALL is .016 and highly significant, indicating that small firms tend to be associated with higher unsystematic risk. H_{1b} is also supported because WCRAT showed a significantly negative impact of -.0258 on unsystematic risk, implying that restaurant firms with less working capital have higher unsystematic risk. We also found support for H_{1c}, as the coefficient estimate for COGSRAT of .0133 is highly significant. This supports the notion that firms with higher cost of goods sold ratios have higher unsystematic risk. Coefficient estimates of OPEXRAT and LEVRAT, .0458 and .004,

TABLE 2. Correlation Matrix for the Variables Used in the Regression Models

| | STDDEV | SMALL | WCRAT | COGSRAT | OPEXRAT |
|---------|--------|---------|---------|---------|---------|
| STDDEV | | | | | |
| SMALL | .39*** | | | | |
| WCRAT | -.16** | .31*** | | | |
| COGSRAT | .34*** | .23*** | -.19*** | | |
| OPEXRAT | .40*** | .28*** | -.21*** | .9*** | |
| LEVRAT | .01 | -.23*** | .10** | -.22*** | -.23*** |

Note. Table 2 shows the Pearson correlation coefficients for the variables used in the regression models. STDDEV is the standard error of the regression models run against daily company stock returns against the returns of the S&P 500. SMALL is an indicator variable with a value of "1" for firms with assets totaling less than \$100 million. WCRAT is the ratio of working capital to total assets. COGSRAT is the ratio of cost of goods sold to total revenue. OPEXRAT is the ratio of total operating expenses to total revenue. LEVRAT is the ratio of total liabilities to total assets.

*Significant at .10, **significant at .05, ***significant at .01.

TABLE 3. Regression Results

| Predictor | Coefficient | White Error | T Value | P Value | VIF |
|-----------|-------------|-------------|---------|---------|------|
| CONSTANT | -.0339*** | .0074 | -4.57 | .000 | |
| SMALL | .0160*** | .0034 | 4.66 | .000 | 1.34 |
| WCRAT | -.0258*** | .0065 | -3.95 | .000 | 1.36 |
| COGSRAT | .0133*** | .0027 | 4.92 | .000 | 1.76 |
| OPEXRAT | .0457*** | .0087 | 5.28 | .000 | 1.86 |
| LEVRAT | .0040*** | .0008 | 5.02 | .000 | 1.07 |

Note. *R* squared = 31.3%; adjusted *R*-squared = 30.3%.

Table 3 shows the regressions results for the model that uses STDDEV as the dependent variable (the standard error of the regression models using daily company stock returns regressed against the returns of the S&P 500 Index). SMALL is an indicator variable with a value of "1" for firms with assets totaling less than \$100 million. WCRAT is the ratio of working capital to total assets. COGSRAT is the ratio of cost of goods sold to total revenue. OPEXRAT is the ratio of total operating expenses to total revenue. LEVRAT is the ratio of total liabilities to total assets.

***Significant at alpha = .01.

respectively, are highly significant. This provides empirical support of H_{1d} and H_{1e} . It appears that firms with higher operating expenses and more financial leverage tend to have higher unsystematic risk. Thus, all of our alternative hypotheses were supported.

CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

This research has attempted to assess the relationship between key risk factors in the restaurant business and the unsystematic risk of the firm. We have focused primarily on financial management variables such as working capital and financial leverage, as well as operational variables such as cost of goods sold and total operating expenses. Our results tend to support our a priori expectations with regard to each of our alternative hypotheses. For example, firms with less working capital and higher operating expenses are riskier, at least in terms of unsystematic risk. Finally, the relationship between cost of goods sold (usually the greatest expense for restaurants) and unsystematic risk is positive and significant.

The skills and background of managers is critical to the success of any business. However, this is particularly true in the restaurant business. The restaurant business is fiercely competitive in that there are typically fewer

barriers to entry than in other types of businesses. Furthermore, consumer tastes will change over time, which enhances the challenge for managers. Therefore, the abilities of management are a critical component of a successful restaurant business. This research indicates that risk in the restaurant business is directly related to management of working capital and key expenses such as cost of goods sold and other operating expenses. How management handles these areas should be a key component in an owner's evaluation of management's ability.

This research could be considered a first step in exploring the relationship between the managerial skill set and the riskiness of the restaurant business. We did not test the concept of "managerial risk" here. However, future research could investigate more closely the relationship between management's ability (or lack thereof) and diversifiable risk in the restaurant industry. Potential determining factors such as industry experience, education, and access to capital would be very helpful in understanding how the individual owner/manager impacts the risk profile of the business.

Although there has been some research into managerial attributes of independent restaurant managers, very little (if anything) has been completed regarding managers of public restaurant firms. This could provide valuable insight for corporations and investors alike because investment opportunities are generally more readily available in publicly traded restaurants than in private ones. Furthermore, this type of research could investigate unsystematic risk factors in other segments of the hospitality industry, including hotels and casinos.

AUTHOR NOTES

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William Andrew was Professor Emeritus at the School of Hospitality Management, Pennsylvania State University, State College, Pennsylvania. Professor Emeritus Andrew is now deceased.

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