ANALYZING RISK IN THE RESTAURANT INDUSTRY

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

During the last three decades the U.S. restaurant industry has enjoyed an ever-increasing and vital growth-curve. According to the National Restaurant Association (NRA) (2004), the industry sales increased from $42.8 billion in 1970, to $164.2 in 1984, rising in 1994 by $281.5, until reaching $ 440.1 in 2004, totaling an annual growth rate of 7.1% from 1970 to 2004. Industry sales are predicted to advance 4.4% in 2004 and equal 4% of the U.S. gross domestic product. The U.S. restaurant industry currentlyemploys 12 million people, and it is the second largest employer next to the federal government. The NRA estimates that 878,000 locations served over 70 billion meals and snack occasions in 2004. The industry's overall economic impact is expected to exceed $1.2 trillion in 2004; this figure includes sales in related industries, such as agriculture, transportation and manufacturing. The exponential growth experienced by the restaurant industry is very likely to continue through the next decade; indeed, 1 million locations are forecasted to operate in 2010, while the NRA, also, projects that 13.5 millions people will be working in the industry by2014 . Industry trends are charted in Appendix A.

Kim and Gu (2003) list some important factors that have contributed to the growth of sales in the industry. To begin with, the increased number of hours worked by

Americans affects the number of meals eaten outside the home. Also to consider is that changes in consumer behavior could influence the sales increase. People regard dining out with relatives and friends as leisure activity that affords them the opportunity to socialize. Next, the stability and strength of the U.S. economy in the last decade have influenced restaurant sales. For instance, the restaurant industry has benefited from higher levels of disposable personal income and greater degree of consumer spending. Finally, the low interest and inflation rates were important determinants for the solid growth-rate experienced by the restaurant industry. The low interest rate allowed restaurant chains to expand and adapt to the consumer's desire to dine out. On the other hand, low inflation rates have minimized the operating cost of restaurant firms.

Despite encouraging restaurant industry growth figures in the last three decades; there still exists a need for research concerning the risk of this industry. Further studies on the restaurant industry will enhance shareholders' understanding of the industry. Like other investors, restaurant investors (for the purpose of this study, the term investor is defined as the person who purchased securities in restaurant firms) are concerned about the return and risk of their investments.

For a publicly traded firm that operates in an efficient capital market, the stock prices instantly and completely reveal the relevant information of such a firm (Copeland & Weston, 1983). The volatility of the firm's stock reflects its risk as perceived by the investors. For instance, high stock volatility represents high firm risk.

Managers monitor the risk for two reasons. First, they try to control the effects of failure, such as losses suffered by investors, creditors, suppliers, and employees; they

next attempt to monitor the effect on their company's cost of capital and market value (Borde, 1998)

Investors collect a large amount of information concerning the key policies of publicly traded firms through annual reports, professional security analysis, magazines, and other forms of reports. They intuitively compare the companies that are candidates for inclusion in their portfolios and the overall economy. The comparison is made based on what they know about each company. For instance, based on the production processes, they can determine which company is more capital-intensive and which is more labor-intensive for purposes of determining firm's earnings sensitivities to labor and capital market conditions. Similar comparisons can be made with regards to a firm's marketing strategies. Nevertheless, financial policy reports simplify the comparison among firms because marketing and production policy information is not as accessible or as easy to interpret in quantifiable form by security analysts or investors. After many firm comparisons, the market as a whole establishes the relative volatility or sensitivity of each firm's securities to a broad-based market index. This volatility is the systematic risk, denoted as beta (Logue & Merville, 1972).

The Capital Assets Pricing Model (CAPM) (Sharp, 1963, 1964; Lintner, 1965) determines that stock return is a function of a firm's systematic risk. The expected return that an investor would require for his or her investment is based on the systematic risk. In accordance with the CAPM theory (Sharp, 1963, 1964; Lintner, 1965), there are two types of risk associated with the firm stock, the systematic and the unsystematic risk. The first, called market-related risk and denoted as Beta (β), represents the stock's volatility caused by the market's volatility. The second type, the unsystematic risk, represents the

volatility of the stock return as a consequence of specific events that have occurred in a firm. The total risk results from combining the two, the systematic and unsystematic risk, and it is measured by standard deviation (sometimes variance is used) of its stock return. Particular characteristics distinguish each risk type. While the unsystematic risk can be reduced or voided by a diversification strategy, the systematic risk is into to the market movements. For instance, the shareholders can reduce or eliminate the unsystematic risk caused by particular firm events (for example, lawsuits, strikes, etc.), holding a well-diversified portfolio of different stock. Conversely, the systematic risk cannot be eliminated by diversification because it is a market-related risk thatwill affect all the stocks. The shareholders will still confront the market volatility originated in such situations as recession, war, and inflation, despite how diversified their portfolios are. Due to the particular characteristic of non-diversifiability, the systematic risk must be priced on the capital market. From an investment perspective high systematic risk has to be compensated with high returns because investors cannot implement a diversification strategy to reduce it. On the other hand, the unsystematic risk can be diversified away by the investors, and they do not need to be compensated for it. Therefore, the unsystematic risk is an unimportant factor in estimating the investor's required return in the CAPM (Gu & Kim, 1998).

The operating, investing, and financing policies applied by a firm affect its business. Consequently, the financial and systematic risks are affectedas well. Mao (1976) indicated thatthe financial and business risk variables that affect the company's systematic risk must be controlled by the firm's executives. He mentioned, for instance, that pursuing a conservative growth or using less debt may lower firm risk. Likewise,

Breen and Lerner (1973) assert that modifying the firm's financing, investing, and operating decisions could change its stock's return and risk characteristics; specifically the systematic risk is expected to change. Increasing the systematic risk would decrease the firm's value. Consequently, there exists a connection between firm behavior and the market value of the firm's share, indicated by the systematic risk. Because of the importance of this link or connection, this paper examines the relationship between systematic risk and financial variables in an effort to identify the systematic risk determinants.

Different restaurant sectors, within the restaurant industry, are likely to perform differently due to their unique operating and marketing characteristics. Kim and Gu (2003) divided the restaurant industry into full-service, economy/buffet, and fast-food restaurant segments. They concluded that from the restaurant market investors' perspective, the restaurant sectors may have different risk/return characteristics, depending on their operation type. For instance, the 9/11 terrorist attacks affected the restaurant segments in various ways. While the full-service segment experienced a decline in the sales during the week after the attacks, the fast-food segment enjoyed a sales increase because many Americans chose in-house dining alternatives.

Kim and Gu (2003) also indicated that economy/buffet and fast-food restaurants were more liquid with higher inventory turnover. Moreover, these segments utilized more debt financing than full-service restaurants. Walker (1996) pointed out some varying characteristics between the different restaurant segments that can profoundly affect the operations. For instance, full-service restaurants have a higher labor cost, require a higher degree of expertise to operate, and focus on a different market target than the quick

service restaurants. According to Lombardi (1996), there was an unequal sales rate growth among the segments during the last three decades. Quick-service restaurants outperformed full-service units in dollar sales growth, increasing by nearly $61 billion from 1975 to 1995 as opposed to the $24 billion of the full-service during the same period.

Considering these different characteristics among the segments, this paper examines the different segments and attempts to find possible variations that exist in the relationship between financial variables and systematic risk.

In an attempt to investigate the systematic risk determinants, previous studies (Moyer & Chatfield, 1983; Logue & Merville, 1972; Melicher, 1974; Borde, 1998; Gu & Kim, 1998; Kim, Gu, & Mattila, 2002) have focused on the relationships between the systematic risk and liquidity, debt leverage, efficiency, profitability, firm size, and growth. This study will perform an empirical test to investigate which determinants or financial variables exert a greater influence on the systematic risk in the U.S. restaurant industry. Furthermore, this paper will explore whether or not there are differences as to how those determinants affect the quick service restaurant and full-service restaurant segments.

Problem Statement

Despite several studies that have analyzed the relationship between systematic risk and the financial variables (Moyer & Chatfield, 1983; Logue & Merville, 1972; Melicher, 1974; Borde, 1998; Gu & Kim, 1998; Kim, Gu, & Mattila, 2002), there still

exists a need for a more complete understanding of this topic. The findings from these studies are mixed, and they have not resolved the debate about the determinant of the systematic risk.

Empirically speaking, little is known about this subject in the restaurant industry and, to the best of my knowledge, the topic's relevance and importance has not been fully investigated in the restaurant industry segments.

Objectives of the Study

The study's purpose is to investigate the determinants of the systematic risk in the restaurant industry. There is little empirical evidence about the systematic risk determinants in either the quick-service or the full-service segments, and it also is necessary to determine if those segments differ.

The objectives of the study are twofold. It first aims to examine whether systematic risk is influenced and predicted by certain financial variables in the overall U.S. restaurant industry, and it sets out to determine which variables better explain the systematic risk. It next intends to investigate how those financial variables affect the systematic risk with regards to the quick-service and the full-service segments.

CHAPTER 2

LITERATURE REVIEW

Defining Risk

Andrew and Schmidgall (1993) suggest that managers create value by investing the owner's money if a return on the owner's equity (ROE) exceeds the required rate of return or owner's opportunity cost (K_E). That is to say thatthose projects have a positive net present value (NPV). In either case, the owner or investor must know the appropriate required rate of return for the investment in order to decide whether such investment is value creating or not. In order to understand just how the required rate of return (K_E) is determined, it is important to know what K_E represents (Andrew & Schmidgall, 1993). The required rate of return (K_E) has two components: the price of time and the price of risk. The first component is the compensation that the investors require for deferring the present consumption and investing their money. The required rate of return (K_E) must reflect the rate of return that the owner could earn by investing in a risk-free investment (such as a US government treasury security) during the same time of the life of the potential hospitality project. This risk-free rate of return (R_f) represents the rate of return that the owner could earn on an investment without assuming any risk. The second

component of the required rate of return (K_E), the price of risk, refers to the risk premium that the investors require because of the risk that has that particular hospitality investment. This risk represents the uncertainty of the return that an investment has.

$$K_E = R_f + \text{Risk Premium} \quad (1)$$

The CAPM explains in detail these components (Sharpe, 1963, 1964). The model proposes that the Risk Premium, in a portfolio sense, is the excess market return over the risk-free rate of return (R_f) multiplied by the level of systematic risk for the specific investment (Kim, Gu, & Mattila, 2002). The CAPM can be symbolized in the following manner:

$$R_i = R_f + (R_m - R_f) \times \beta_i \quad (2)$$

Where:

R_i = the expected return on the ith security.

R_m = the return on the market portfolio.

R_f = the risk-free rate.

β = the estimated beta of the ith security.

According to Andrew and Schmidgall (1993), the risk exists because there are multiple possible outcomes for the investment; consequently, these outcomes could differ from the expected value. The more these outcomes differ from the expected value, the greater the risk becomes. The measure that tells us about the range or dispersion of the outcomes is the standard deviation or variance. The greater the standard deviation is, the greater the dispersion of possible returns and the possibilities of losses will be.

Decomposition of a Firm's Total Risk

Sharpe (1963) developed a single-index model that associates the return of a stock to a common index, using linear equation. The model indicates that beta, defined as the sensitivity of a security's return to the return of the capital market, can be estimated using historical data:

$$R_i = \alpha_i + \beta_i R_m + e_i \quad (3)$$

Where:

R_i: return on the *i*th security.

R_m: return on the market portfolio.

e_i: error about the regression line that represents the relationship of the two.

β_i: estimated beta of the *i*th security.

α_i: estimated vertical intercept.

Levy and Sarnat (1984) decompose the variance of a security's return in two parts, systematic risk and unsystematic risk. Taking the variance of the both sides of the previous equation yields the following equation:

$$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_e^2 \quad (4)$$

The left-hand side of the equation (σ_i^2) is a measure of the total risk, while the right side represents both, the systematic risk ($\beta_i^2 \sigma_m^2$) and the unsystematic risk (σ_e^2). The symbols are defined as follows:

σ_i^2: variance of the return on the *i*th security.

β_i: beta of the *i*th stock. This represents the sensitivity of *i*'s return to the market return.

$\beta_i^2 \sigma_m^2$: stock's covariance with the market.

σ_e^2: variance attributable to i's random residual returns.

Empirical Studies on Beta Determinants

Numerous studies have been conducted to analyze beta determinants. These studies have concentrated specifically on the relationship between beta and financial variables, such as liquidity, leverage, profitability, efficiency, growth, and size.

Liquidity

Analyzing the relationship between liquidity measures and systematic risk, previous studies argue different points of view as to how the systematic risk is related to liquidity. Moyer and Chatfield (1983) analyzed how the systematic risk is affected by different financial measures within companies possessing strong market power. They define market power as the monopoly power that some large firms have to raise profits above levels that would otherwise exist in a more competitive environment. The liquidity measure employed in that study was the current ratio. The result revealed a negative relationship between current ratio and systematic risk. They allege that high values of the

current ratio, indicating high liquidity and hence low levels of short-term financial risk, should be related with lower values of the systematic risk. Logue and Merville (1972), concurring with Moyer and Chatfield (1983), pointed out thatthe logic for a negative relationship is that a firm with a high liquidity should be less sensitive to economic fluctuations.

Borde (1998), on the other hand, discovered a positive relationship between liquidity and systematic risk. He argued that having too much liquidity may imply that available resources are being imprudentlyinvested . This argument suggests that if the available resources are not being invested in operating assets, which normally produce higher returns than cash or marketable securities, the systematic risk could very well increase.

Opposing these conclusions are other studies that did failed to locate a significant relationship between risk and liquidity. For instance, Gu and Kim (1998) examined the risk in the casino segment in the hotel industry. They could not ascertain a significant relationship between risk and current ratio. They suggest that further investigation is necessary to explain the role of the two variables in determining the systematic risk in the casino segment.

Leverage

Kim, Gu, and Mattila (2002) stated that the theory indicates that financial leverage is positively related to systematic risk. Concurring with the theory, their findings revealed that the total debt to total asset ratio, utilized to measure leverage, was positively

related to systematic risk. These findings suggest that high debt places the shareholders in a much riskier position. Logue and Merville (1972) utilized two measures of leverage, short-term liabilities to total assets (STL/TA) and long-term debt to total assets (LTD/TA), to investigate the relationship with regards to systematic risk. They found that both leverage measures are positively related to systematic risk. These results imply that more debt implies higher systematic risk because the common stock earnings will display greater sensitivity to economic fluctuations.

Although many studies (Kim, Gu, & Mattila, 2002; Logue & Merville, 1972; Bowman, 1979) support a positive relationship between leverage and systematic risk, some studies fail to validate this statement when tested. For instance, Gu and Kim (1998) discovered a negative relationship between leverage and systematic risk. They consider this result difficult to explain since it suggests that higher debt leads to lower systematic risk. Moreover, Borde (1998) determined that leverage seems to be unrelated to systematic risk. This result was surprising, as a high degree of financial leverage typically increases systematic risk.

Profitability

The findings are mixed with regards to how profitability affects systematic risk. Some studies (Logue & Merville, 1972; Borde, 1998; Kim, Gu, & Mattila, 2002) supported that a negative relationship exists between the profitability measures and systematic risk, arguing that companies with high profitability have low chances of failure and risk less. Logue and Merville (1972) pointed out that this relationship is not

unambiguous. Even on an intuitive level, it seems reasonable to think that the greater the profitability of the firm, the higher will be the return expected by the investor. Likewise, it appears logical to conceive that the higher the investor's expected return, the lower is the possibility of firm failure. This situation seems rare because it implies that such a firm will only have a high return on assets (ROA) with very low debt. A more realistic situation occurs when a company has a high rate of return on total assets and a high level of debt. In this case, Logue and Merville (1972) argue that the positive relationship of leverage, as previously explained, may offset part of the negative relationship that profitability may have on systematic risk. They found a negatively relationship between profitability, measured by profit margin (PM) and return on assets (ROA), with regards to systematic risk.

Even Borde (1998) found a negative relationship between profitability and systematic risk; he ascertained that the relationship between profitability measures and systematic risk may vary among different types of businesses. He further explains that some firms generating high operating returns over an extended time period may be implementing an aggressive business strategy; consequently, they may be subject to a high level of systematic risk. Agreeing with Borde (1998), Melicher (1974) located a positive relationship between systematic risk and return on equity (ROE).

Efficiency

Several findings suggest that efficiency measures have a negative relationship with systematic risk. Gu and Kim (1998) found a negative relationship between

efficiency, measured by the asset turnover ratio, and systematic risk. They suggest that efficient assets management can lead to a lower systematic risk. Likewise, Logue and Merville (1972) ascertained the same relationship existing between these measures. These studies suggest that, logically speaking, efficiency should lead to high profit. This should determine a low probability of failure, so the risk should also be low. Conversely, Kim, Gu, and Matilla (2002) found that efficiency failed to have a significant impact on systematic risk.

Growth

To measure the growth of the company or industry, several methods have been utilized. Moyer and Chatfield (1983) measured growth in a ten-year historical data of the earning per share (EPS). Their findings revealed a negative relationship between risk and growth; even a positive relationship is expected on the assumption that high growth should be achieved by assuming more risk. From the systematic risk perspective, this finding suggests that investors do not relate high growth rates with corresponding high risk levels. In fact, high growth rates could be perceived by investors as an indication of the firm's ability to successfully handle risk.

Borde (1998) utilized the average growth rate on earning before interest and taxes, EBIT to measure the restaurant industry growth. He explained that there are conflicting arguments about the relationship between growth and systematic risk. If a restaurant has a promising growth scenario, the market will tend to bid up the stock price in anticipation of high future earnings, while investors will perceive restaurants with few

growth opportunities as riskier. This will imply a negative relationship between growth and systematic risk. Conversely, he argued for a positive relationship when rapidly growing restaurants may lack adequate resources to handle the internal stress produced by fast growth which increases risk. His findings revealed that growth, as represented by growth in earnings before interest and taxes (EBIT_G), is positively related to systematic risk; this supports his argument thatfast g rowth firms are perceived as riskier by the investors due to the inadequate resources to manage that growth.

Kim, Gu, and Mattila (2002) utilized annual percentage change in total assets as a measure of hotel industry growth. They found a positive and significant relationship between growth and risk, and they suggest that fast-growing firms need large amounts of capital to support their expansion.

Size

Kim, Gu, and Mattila (2002) used the average total capitalization over the study period to measure the companies' size. They define capitalization as outstanding shares multiplied by the closing stock price at the year's end. They claimed a negative relationship between firm size and risk. The logicis that large firms tend to have low systematic risk because they absorb the impact of economic, social and political changes. These firms also could use the market power to obtain better performance in a competitive environment. Moyer and Chatfield (1983) utilized three different firm size measures - total sales, total assets, and market share ratio (the ratio of company sales to industry sales)- to analyze the relationship with the systematic risk. Although they

claimed a negative relationship between size and systematic risk, the study's results revealed that the firm size measures fail to exert any significant impact on systematic risk.

Hypothesis

Due to the ambiguous relationship between systematic risk and the financial variables (determinants of systematic risk) found in the financial literature, the hypotheses proposed are based on previous literature in the hospitality finance. The study's hypotheses refer to the relationship of each of the financial variables and systematic risk. These variables include profitability, leverage, efficiency, liquidity, growth and capitalization. The first six hypotheses attempt to accomplish this study's first objective, which is to test the relationship between financial variables and systematic risk in the overall restaurant industry. Hypothesis seven, on the other hand, tries to achieve the study's second objective, which is to investigate whether or not differences exist between the quick and full-service segments in the relationship between those financial variables and systematic risk.

Because high profitability ratios lower the probability of business failure and, consequently, the risk, the profitability measures were negatively related to risk. Some studies (Borde, 1998; Kim, Gu, & Mattila, 2002)confirmed this theory . This study uses Return on Investment (ROI) as an indicator of profitability.

Hypothesis 1: profitability is negatively related to systematic risk.

Because high leverage is expected to increase financial risk, the leverage measures were found to be positively related to risk (Gu & Kim, 1998; Borde, 1998; Kim, Gu, & Mattila, 2002). This study used debt to equity(D/E) as an indicator of leverage.

Hypothesis 2: Restaurant firms with high leverage have high systematic risk.

Gu and Kim (1998) suggest that a high level of operational efficiency leads to an increase in profit. This idea suggests that the probability of business failure is low which reduces, in turn, the systematic risk. A negative relationship between risk and efficiency measures was demonstrated by Gu and Kim (1998). This paper utilized receivable turnover (REC_T) as an efficiency indicator.

Hypothesis 3: Restaurant firms with high efficiency will be subject to low systematic risk.

High liquidity might indicate that available resources are being unwisely invested, increasing the investors' risk perception (Borde, 1998). . Thus, the researcher postulates the positive relationship between liquidity and risk in his study. This study employed quick ratio (QR) as a liquidity indicator.

Hypothesis 4: Liquidity is positively related to systematic risk.

Companies that experience rapid growth may not possess adequate resources to handle the internal stress caused by it. Consequently, investors perceive this situation as risky. Borde (1998) found that accelerated growth is positively associated with systematic risk. As a growth indicator, this paper used growth rate in earning before interest and taxes (EBIT_G).

Hypothesis 5: Firms subject to fast growth have high systematic risk.

Large firms are likely to have market power and an enhanced ability to control the impact of economic, social and political changes. Because of these characteristics, large firms may be perceived as lower risk investments by the investors. Kim, Gu, and Mattila (2002) found a negative relationship that existed between size and risk. This study utilized capitalization (CAP) as an indicator of size.

Hypothesis 6: Large restaurant firms have low systematic risk

Because different restaurant industry segments are likely to perform differently due to the particular operational characteristics, the investors' risk perception among the segments may vary (Kim & Gu, 2003). Different target market and cost labor structure are also factors that distinguish the segments (Walker, 1996).

It does appear that the relationship between the financial variables and systematic risk in different sectors of the restaurant industry was not previously tested. Due to this fact, at first, it is expected significant differences in the results pattern in comparison with the different segments of the restaurant industry. For the purpose of this study the restaurant industry is divided into two segments: The full-service and the quick-service segments.

Hypothesis 7: There is a significant difference between financial variables and systematic risk between the full-service and quick-service restaurant segments.

CHAPTER 3

METHODOLOGY

This chapter contains four sections: research design, measurement of the variables, data collection and sampling plan, and analytical procedures.

Research Design

This study used secondary data collected from Standard & Poor's COMPUSTAT database, to calculate the financial variables and systematic risk. The research in this study was conducted through the calculation of financial indicators to measure profitability (return on investment), leverage (debt to equity), efficiency (receivable turnover), liquidity (quick ratio), growth (growth rate in earning before interest and taxes), and size (capitalization). The study's main objective is to investigate the determinants of the systematic risk in the restaurant industry and to determine whether or not there are significant differences between the full-service and quick service segments.

Measurement of the Variables

Seven indicators of total seven financial variables are measured to achieve the study's empirical test. The selection of a specific indicator is based on previous studies and is valid to examine their relationship with systematic risk. The definition of each indicator is stated as follows:

Beta (β) or systematic risk, defined as the measurement of the sensitivity of a company's stock price to the overall fluctuation in the price of public companies.

Helfert (2001) defines ROI as the relationship of annual after-tax earnings to the book value of the assets and figures as a measure of profitability. He also points out that ROI is the simplest way of expressing the profitability. Walsh (1996) indicates that ROI is one of the most important concepts in business finance. He also specifies that there exist two other indicators widely used to measure profitability, the return on total asset (ROA) and the return on equity (ROE). Previous studies (Kim, Gu, & Mattila, 2002; Borde, 1998; Kim & Gu, 1998; Moyer & Chatfield, 1983) have utilized different indicators to measure profitability. This study, based on these theoretical frameworks, utilizes ROI as a measure of profitability. Return on investment is calculated as follow: Income Before Extraordinary Items – Available for Common, divided by Total Invested Capital (Total Long-Term Debt + Preferred Stock + Minority Interest + Total Common Equity)

Debt to Equity relates the outstanding obligations to the shareholders' equity, and it is considered a measure of leverage (Helfert, 2001). He explains that this ratio attempts to show the relative proportions of all the lenders' claims against the owner's claims.

Walsh (1996) asserts that debt to equity ratio is one of the most important indicators in corporate finance. He indicates that there exist some difficulties using this ratio. Different names and methods of calculation cause confusion to interpret this measure; even those different methods mean the same thing. The classic approach utilized is total debt to equity (D/E). The other approach is total debt to total assets (D/A). Studying the systematic risk determinants, different studies opt for both approaches. For instance, while Kim and Gu (1998), utilized the ratio of total liabilities to total assets (D/A), Moyer and Chatfield (1983) chose debt to equity (D/E). To test the relationship between leverage and systematic risk, this paper utilizes debt to equity (D/E) ratio. Debt to equity is calculated as follow: Total Debt divided by Stockholders' Equity, and multiplied by 100.

Gallinger and Healey (1987) define Receivable Turnover as sales to accounts receivable, which represents a measure of efficiency. They explain that there exist two critical inspection points of the cash flow cycle in the financial statement to be sure that the funds are flowing freely. The first critical inspection point is the finished goods, measured by inventory turnover ratio (defined as cost of goods sold divided by average inventory). The second critical point is the accounts receivables, indicated by accounts receivable turnover (credit sales to year-end receivables). Total assets turnover (sales divided by average total assets) is also utilized to measure efficiency. This approach represents a gross indication of asset utilization. Gallinger and Healey (1987) indicate that receivable turnover ratio is one of the most important measures of funds flow. This ratio indicates the quality of the receivables and shows how successfully the company collects its outstanding receivable. Based on this theoretical explanation, the present

study will utilize the receivables turnover ratio in order to test the relationship between efficiency and systematic risk. Receivables turnover is Net Sales, divided by the average of the current year's Total Receivables, and the prior year's Total Receivable.

Quick Ratio indicates the relationship between the quick assets (cash, marketable securities and accounts receivables) and current liabilities. This is a liquidity measure. Schmidgall (2002) indicates that while the current ratio (CR) shows the relationship between the total current assets and the total current liabilities, the quick ratio is a more stringent test thatconsiders only the quick assets. This ratio excludes from the current assets the inventories and prepaid expenses in order to be more accurate in the calculation of the liquidity because some companies take more time than others to convert their inventories to cash. He declares that some hospitality firms, such as those included in the quick-service restaurant segment, have very high food inventory turnover. This paper includes the quick ratio (QR) as an indicator of the liquidity in attempt to show possible differences between the quick-service and full-service restaurant segments. Quick ratio is defined as the sum of Cash and Equivalents, which represent cash and all securities readily transferable to cash, plus Total Receivables, which are claims against other collectible in money (within one year), divided by Total Current Liabilities, which are liabilities due within one year.

Previous studies (Kim, Gu, & Mattila, 2002; Borde, 1998) used different growth measures to test the relationship between growth and systematic risk. Kim, Gu, and Mattila (2002) utilized the annual percentage change in total assets as a growth indicator. However, Borde (1998) argued that the company's historical growth in earning before interest and taxes (EBIT_G) could be utilized as a proxy for future profitability;

consequently, this may reflect the company's growth opportunity. For instance, a firm with a high growth rate in EBIT may have better growth opportunities than firms with a low EBIT growth rate. This study utilizes EBIT_G as an indicator of growth based on Borde's (1998) assumption. The growth rate in Earning Before Interest and Taxes is calculated comparing the last annual report with the previous year's annual report.

Kim, Gu, and Mattila (2002) defined capitalization as the number of outstanding shares multiplied by the closing stock price at the year's end. They found a negative relationship between a firm's size and systematic risk. This study utilized this measure in an attempt to either confirm or negate Kim, Gu, and Mattila's (2002) findings. Capitalization is the number of outstanding shares multiplied by the closing stock market price at the year's end.

Data Collection and Sampling Plan

This study used secondary data, which were collected from Standard & Poor's COMPUSTAT database, SIC code 5812, eating and drinking places. The data required for this research included Return on Investment (ROI), Debt to Equity ratio (D/E), Receivables Turnover ratio (REC_T), Quick Ratio (QR), Earning Before Interest and Taxes (EBIT_G), Shares Outstanding year's end, Stock Price year's end, and systematic risk (Beta).

The data necessary for this research was the year-end performance from 1999 to 2003, with the exception of Beta, which was collected on a monthly basis, and afterward calculated annually. Shares Outstanding and Stock Price at the year's end were used to

calculate the capitalization variable. The data was calculated on a five year average as presented in Appendix C.

The researcher placed 76 publicly traded restaurant firms from COMPUSTAT within the category of eating and drinking places, which have the SIC code 5812. Eighteen companies were eliminated due to lack of information for calculations of the financial variables and systematic risk. Thus, the sample for this study is 58 firms representing the overall restaurant industry. Subsequently, the industry was segmented, classifying 25 firms in the Quick Service segment and 33 in the Full Service segment.

Analytical Procedure

To assess the objectives of the present study, the restaurant industry was divided into Quick Service and Full Service segments. According to Lombardi (1996), the Quick Service could be represented by hamburger, pizza, chicken, sandwich, mexican, ice cream and yogurt, and donut sub-segments, while the Full Service includes family-varied menu, family steak, cafeteria-buffet, casual dining-varied, fish-seafood, steak, Italian, and Mexican sub-segments. The classification of each company in the corresponding segment was determined by obtaining the profile data from each company in Reuter's database. Company classification is showed in Appendix 2.

As stated in the literature review section, the risk has two components, the systematic and the unsystematic part. The unsystematic risk could be reduced, or eliminated, by diversification strategy. Conversely, the systematic risk cannot be reduced by that strategy; however, operating, investing and financing policies influence this part

of the risk. Based on the study's purpose, only the systematic risk will be considered. The measurement of systematic risk is represented by Beta, defined by Standard & Poor's COMPUSTAT database as the measurement of the sensitivity of a company's stock price to the overall fluctuation in the Index Price for U.S. Companies.

The selections of appropriate financial variables that affect the systematic risk were based on previous literature in the hospitality industry. To measure the effects of the mentioned financial variables on the investors' risk perception in the restaurant industry, three separate multiple regression analyses were conducted for the quick-service, full-service, and the overall restaurant industry. The dependent variable utilized in the study was Beta, and the independent variables were Return on Investment, Debt to Equity, Receivables Turnover, Quick Ratio, Growth in Earning Before Interest and Taxes, and Capitalization. The collected data for the final survey was analyzed by SPSS 2000 statistic program.

CHAPTER 4

RESULTS

Descriptive Statistics

Table 1 provides descriptive statistics of the financial variables characteristics found in the overall restaurant industry, the quick-service segment, and the full-service segment.

Table 1 Descriptive Statistics

Financial Variables (Unit)	**Overall Restaurant Industry**		**Quick-service Segment**		**Full-service Segment**	
	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
Systematic Risk	0.48	0.40	0.59	0.42	0.39	0.36
Profitability (ROI- ratio)	-0.01	0.28	-0.04	0.41	0.01	0.14
Leverage (D/E - ratio)	0.89	0.99	0.91	0.97	0.87	1.02
Efficiency (Rec T - ratio)	129.80	141.59	129.37	163.40	130.13	125.24
Liquidity (QR - ratio)	0.48	0.33	0.56	0.34	0.42	0.31
Growth (EBIT G - ratio)	0.06	0.15	0.08	0.20	0.05	0.10
Size (CAP - $ in millions)	11.49	49.12	21.14	73.98	4.17	8.04

In terms of profitability, Table 1 seems to show that the quick-service segment has stronger performance than the full-service segment. As stated in the literature review,

the quick-service segment appears to be more liquid, and it also seems to use more long-term debt than the full-service segment does. As far as efficiency is concerned, there appears to be no important difference between the two segments. On the other hand, the quick-service segment appears to display a slightly higher rate of growth than the full-service segment does. Finally, with regards to size, the quick-service segment seems to have larger indicators than the full-service segment does.

In order to examine how the financial variables affect systematic risk (Beta) in the overall restaurant industry, quick service segment and full service segment, three different multiple regression analyses were conducted. The first multiple regression analysis was conducted for the overall restaurant industry; it attempts to validate the first six hypotheses. The second and third multiple regression analyses were conducted for the quick and full-service segments. These two multiple regression analyses try to validate hypothesis seven.

Results of multiple regression analyses: the overall restaurant industry

A multiple regression analysis of the overall restaurant industry was conducted in an attempt to answer the first objective, that is to examine whether systematic risk is influenced and predicted by certain financial measures in the overall U.S. restaurant industry, and which variables better explain the systematic risk. Consistent with previous studies (Moyer & Chatfield, 1983; Logue & Merville, 1972; Melicher, 1974; Borde, 1998; Gu & Kim, 1998; Kim, Gu, & Mattila, 2002), this paper found that certain

financial measures can indeed predict the investor risk perception. The financial measures affecting systematic risk perception in the overall restaurant industry, in terms of their magnitude, were Return on Investment, Debt to Equity, and Quick Ratio.

Table 2 presents the results of the multiple regression analyses in the overall restaurant industry. All variables in the model, except for the one attaching to CAP (measure of the firm size), have the appropriate signs. In other words, the direction of the effect is theoretically justifiable. However, only return on investment, debt to equity and quick ratio are statistically significant.

According to the F-statistic (F-value = 5.121** significant at $p<0.05$) obtained from the model, the result of the regression suggests that the model fits the data. The adjusted R^2 of 0.34 denotes that the model explains 34% of the variation in beta. The tolerance value is calculated and presented in Table 2 in order to find the presence of multicollinearity. Tolerance is the amount of variability of the selected independent variable not explained by the other independent variables. Consequently, extremely small tolerance values indicate high collinearity. A common cutoff point is a tolerance value of .10. (Hair, Anderson, Tatham, & Black, 1992). Because all tolerance values found in the model are much higher than .10, multicollinearity is not a problem.

Table 2. Result of multiple regression analyses: the overall restaurant industry

Variables	*Coefficient*	t	*p*-value	*Tolerance value*
Dependent Variable				
Systematic Risk (β)				
Independent Variables				
ROI	-0.3712000	-3.174	0.003**	0.879
D/E	0.0093200	1.997	0.052*	0.603
REC_T	-0.0004888	-1.390	0.172	0.561
QR	0.2070000	1.723	0.092*	0.901
EBIT_G	0.0774400	0.236	0.814	0.415
CAP	0.0004000	0.443	0.660	0.472

* Significant at p<0.10
** Significant at p<0.05
Adjusted R^2 = 0.34
F-value = 5.121**
Sample size = 58

The model's results also clearly indicate thatprofitability, measured by return on investment (ROI), was found to be the most significant variable at 0.05 level, with a negative relationship to Beta. Thus, the profitability hypothesis (H1) for the overall restaurant industry is accepted at 0.05 level. Highprofit restaurant firms are found to have low systematic risk.

The debt to equity ratio (D/E) was found to be significant at 0.10 level,and it showed a positive relationship to Beta. Consequently, the leverage hypothesis (H2) is accepted at 0.10 level. Restaurant firms with a high degree of financial leverage are found to have high systematic risk.

Even the sign of the relationship, positive, is congruent with the hypothesis 3, the operational efficiency, measured by receivable turnover ratio (REC_T), was not found to be significant at any level. As a result, the operational efficiency is found not to be a significant factor, affecting the systematic risk in the overall restaurant industry.

Liquidity, measured by quick ratio (QR), was significant at 0.10 level and positive related to Beta. Thus, the liquidity hypothesis (H4) for the overall restaurant industry is accepted at 0.10 level. High levels of liquidity in restaurant firms are found to be related to high systematic risk.

Growth and size, indicated by EBIT_G and CAP, were determined to be not significant on any level. These results fail to confirm Hypothesis 5 and 6. Consequently, growth and size were found not to be a relevant factor in terms of affecting the systematic risk.

Results of the multiple regression analyses: Comparison of Quick and Full Service

Two multiple regression analyses were conducted in an attempt to answer the second objective of the study, specifically, to find out whether there are differences in the findings of the two segments analyzed in this study with regard to the relationship between the financial measures and systematic risk. The present study only partially confirms that the financial variables affect differently the systematic risk in the quick service than the full service segment. Only the profitability measure (ROI) was proven to have a significant and negative relationship to the systematic risk in both segments.

Based on Hypothesis 7, one expects to find differences between the patterns of the results between the quick and full-service segments. In tables 3 and 4, the results of the multiple regression analyses of these two segments are presented.

Table 3. Results of multiple regression analyses: quick-service segment

Variables	***Coefficient***	**t**	***p*-value**	***Tolerance value***
Dependent Variable				
Systematic Risk (β)				
Independent Variables				
ROI	-0.3493000	-2.498	0.024**	0.864
D/E	0.0115000	2.046	0.058*	0.524
REC_T	-0.0003860	-0.832	0.418	0.480
QR	0.0510200	0.303	0.766	0.952
EBIT_G	-0.2520000	-0.550	0.590	0.348
CAP	0.0007900	0.700	0.494	0.391

* Significant at p<0.10
** Significant at p<0.05
Adjusted R^2 = 0.39
F-value = 3.434**
Sample size = 25

Table 4. Result of multiple regression analyses: full service segment

Variables	***Coefficient***	**t**	***p*-value**	***Tolerance value***
Dependent Variable				
Systematic Risk (β)				
Independent Variables				
ROI	-0.7164000	-2.302	0.033**	0.757
D/E	-0.0313500	-0.758	0.458	0.783
REC_T	-0.0004698	-0.721	0.480	0.679
QR	0.3810000	1.608	0.124	0.712
EBIT_G	0.6990000	1.594	0.127	0.702

* Significant at p<0.10
** Significant at p<0.05
Adjusted R^2 = 0.22
F-value = 2.396*
Sample size = 33

Table 3 showed the results of the multiple regression analysis in the Quick Service. According to the F-statistic (F-value = 3.434** significant at p<0.05), the results

indicate that the regression model would possessa reasoning power. Moreover, the adjusted R^2 of 0.39 specifies that the model explains almost 40% of the variation in Beta. The high tolerance values shown in Table 3 denote no multicollinearity problem in this regression model. Only two variables, return on investment (ROI) and debt to equity ratio (D/E), are significant at the level of 0.10. The sign of the relationship between the two variables and Beta are consistent with the results presented in Table 1.

The results of the full service are related in Table 4. As indicated by the adjusted R^2 of 0.18, the model explains only 18% of the variation in Beta. According to the F-statistic (F-value =2.396* signific ant at $p<0.10$), the results indicate that the regression model would possess a reasoning power. From these results only one variable, return on investment (ROI) was found to be significant at 0.05 level. Consistent with the previous results, there is a negative relationship between ROI and Beta. The tolerance values of ROI, D/E, REC_T, QR and EBIT _G were high, displaying no multicollinearity problem. CAP was excluded from the model because of its tolerance values under 0.10, expressing that multicollinearity may be improperly influencing the lease square estimates.

The results found in Tables 3 and 4 partially confirm Hypothesis 7. Except for ROI, differences exist between the variables. For instance, D/E displays undeniable differences. While this indicator shows a positive significant relationship in the quick-service restaurant segment, the same indicator reveals no significant relationship in the full-restaurant segment. These results make clear that there exists virtually no common pattern in the results found between the quick-service and full-service segments. Comparatively speaking, these two segments show only one variable (return on investment) that significantly affects the systematic risk.

CHAPTER 5

CONCLUSIONS AND IMPLICATIONS

This study examines the effects of the financial determinant of the systematic risk. Because the unsystematic part of the risk might be reduced or neutralized by diversification strategy, only the systematic part is presently analyzed. This paper was designed to answer the question; how the financial variables affect systematic risk (Beta) in the overall restaurant industry, quick service segment and full service segment.

The following major objectives were established: (1) to examine the determinants of the systematic risk in the overall restaurant industry, (2) to investigate the effect of those determinants of the systematic risk with regards to the quick-service and the full-service segments.

The following Table 5 shows the summary of the previous seven hypotheses and presents the acceptance or rejection of the null hypotheses.

Table 5. Hypotheses and Results

Hypotheses	Acceptance or Rejection of Null Hypothesis
1. Profitability is negatively related to systematic risk	Accepted
2. Restaurant firms with high leverage have high systematic risk	Accepted
3. Restaurant firms with high efficiency will be subject to low systematic risk.	Not Significant
4. Liquidity is positively related to systematic risk.	Accepted
5. Firms subject to fast growth have high systematic risk.	Not Significant
6. Large restaurant firms have low systematic risk.	Not Significant
7. There is a significant difference between financial variables and systematic risk between the full-service and quick service restaurant segments.	Partially Accepted

Profitability, leverage and liquidity are found to be the most significant factors that affect the systematic risk in the overall restaurant industry. Return on Investment was found to be the most significant variable at 0.05 level, with a negative relationship with systematic risk. This finding confirms the first hypothesis, H1, which states that profitability is negatively related to systematic risk. The strong negative relationship between profitability and systematic risk supports the assertion that firms with superior financial performance would face low probability of loss, causing the investor's risk perception to be low. Kim and Gu (2003), investigating the return on investment of the restaurant industry, discovered that the systematic risk far underperformed the market portfolio. They stated that restaurant investors, like any other investors, intend to obtain the highest possible return on investment at the given level of risk. Consequently, their investment's performance must be estimated considering the return and risk. Restaurant firms should enhance their risk performance, improving their stock returns. Improving revenues and minimizing operating costs, would improve the stock returns. Kim and Gu (2003) also indicate that the problem is how to increase restaurant firms revenue without

raising the risk. They proposed two ways to increase revenue. The first way is to establish more restaurant properties. An issue associated with this action is that restaurant chains that expand too fast with new properties may have higher chance of bankruptcy because the competition and saturation of the market they are facing tend to increase the restaurant's operating cost. Consequently, these firms may be subject to low profit margins and high default risk. The second way to improve revenues is implementing different policies in the existing properties. Improving menu presentation and services, introducing innovative marketing strategies, recruiting and retaining eligible workers, and introducing cost-saving preparation systems, are some of the actions recommended by the authors (Kim & Gu, 2003) to increase the sales revenue for existing properties. These policies may reduce the systematic risk as perceived by restaurant investors.

The second significant variable was leverage. The debt to equity ratio (D/E) was found to be significant at 0.10 level, and it showed a positive relationship with the systematic risk. The leverage hypothesis, H2, is accepted, assuming that there is a positive relationship between leverage and systematic risk. It would be important for the restaurant firms to control debt and, therefore, reduce the financial risk associated with it. As Gu and Kim (1998) pointed out, the positive relationship between leverage and systematic risk suggests that using less debt can help reduce the firm's systematic risk. Moreover, Gu (1993) states that the reality is that restaurant firms are subject to high degrees of seasonality and are very sensitive to economic downturn. Because of these two characteristics, restaurant firms that utilize even medium levels of debt place themselves at substantial risk. He also argues that because restaurants firms are considered risky, they may find themselves in a disadvantageous position when they borrow from

creditors. Because the cost of debt for these restaurant firms may be higher than the cost of debt for non-restaurant industries, increases in debt percentage produce faster increases in financial risk. Consequently, restaurants firms can be negatively affected by excessive use of debt.

The third significant variable was liquidity. This variable, measured by quick ratio (QR), was significant at 0.10 level, and it was positively related to systematic risk. Therefore, this result confirms the fourth hypothesis, H4, which states that liquidity is positively related to systematic risk. This result implies that besides the necessary level of liquidity to assure solvency, investors perceive that excess of liquidity may infer that resources are being imprudently invested. Borde (1998) suggests that if the available resources are not being invested in operating assets, which normally produce higher returns than cash or marketable securities, the systematic risk could increase.

Hypothesis 7 states that there exists a significant difference between financial variables and systematic risk between the full-service and quick-service restaurant segments. The researcher found it partially accepted because the results are mixed. While only one variable, profitability, proves to be significant for both segments, leverage is statistically significant only in the quick-service segment. The rest of the variables were not statistically significant for both segments. These findings imply thatrestaurant managers for these two segments should consider profitability an important determinant affecting systematic risk. Leverage, on the other hand, seems to strongly affect the systematic risk in the quick-service segment. This may indicate thatquick -service restaurants' managers should monitor the long-term debt obligations in order to improve the investors' risk perception. Gu (1993) found that quick-service restaurants have higher

return on investment and use more debt than full-service restaurants. However, the return on investment of the quick-service segment has higher variability when compared to that of the full-service segment. This higher variability on the return on investment indicates higher risk. Consequently, the higher profitability in the quick-service segment is offset by the higher risk. Kim and Gu (2003), on the other hand, found that the quick-service segment has better risk performance than the full-service segment. They stated some possible explanations for this result. First, there was a strong consumer demand for fast foods in recent years, raising the fast-food sales easier than in other restaurant segments. Second, the multiple branding growth may explain the better performance of the fast-food sector. An excellent example of the multiple branding strategy is the combination of gas station and fast-food restaurant. Companies figured out that sharing the same space between brands could increase the return on a relative low investment and raise unit profitability. Another advantage of this strategy is that it allows quick-service chains to penetrate markets that do not have enough population to justify a single concept. Furthermore, Kim and Gu (2003) stated that a possible explanation of the inferior systematic risk performance of the full-service segment could be caused by high operating cost, especially labor costs, associated with expansion in high competitive markets. They suggest that the full-service firms should improve their risk performance consolidating via mergers and acquisitions (M&A). This strategy may allow companies to save on operating costs due to economies of scales difficult to obtain through internal development. Kim and Gu (2003) also recommend that full-service restaurants should implement some strategies to increase sales. Value promotions, creation of brand images, and development of new products may raise the sales revenues. For instance, full-service

restaurants that provide a carryout option could create brand image. These recommendations may increase profitability and lower the systematic risk perceived by the investors.

Logue and Merville (1972) pointed out some practical implications for managers and investors. To begin with, managers should consider the share-price effect when they introduce changes in the financial policy. Next, investors should collect financial, marketing and production policy information as a part of the financial reports. Moreover, if forecasted financial data was included in stockholder reports, the investor would have an easier time detecting potential changes in financial, marketing, and production policies, which could affect the systematic risk. This might alter the price per share of the firm.

Limitations and Suggestions for Future Research

This study is not free of limitations. The study's first drawback is the lack of complete data availability for the calculation of the financial variables during the study period.

The second limitation involves the classification of the restaurant firms. Some companies operate in different segments of the restaurant industry, and it is difficult to clearly classify those firms into either quick-service or full-service restaurants.

The study's aim was not to provide final answers but instead to inspire hospitality researchers to further investigate this compelling topic. These limitations could very well present some potential subjects for further research. For instance, analyzing determinants

of the systematic risk in different sub segments, using different processes to classify companies, or including thenon -publicly traded restaurant companies in future researches, may help both investors and restaurant executives; indeed, they may ultimately be able to clearly understand the nature of those investments and the policies that could apply to reduce systematic risk, enhance the value of the firm, and maximize the wealth of shareholders and owners.

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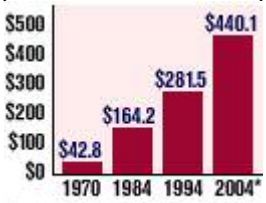
APPENDIXES

APPENDIX A

Trends of the US Restaurant Industry

Sales Forecast

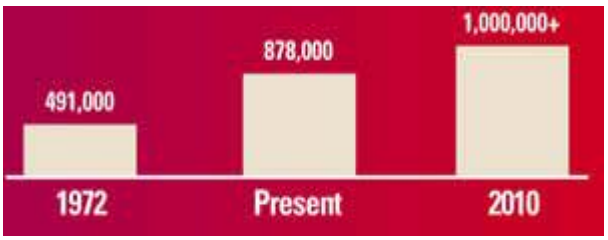
Restaurant industry sales
(Billions of current dollars)



(Source: National Restaurant Association)

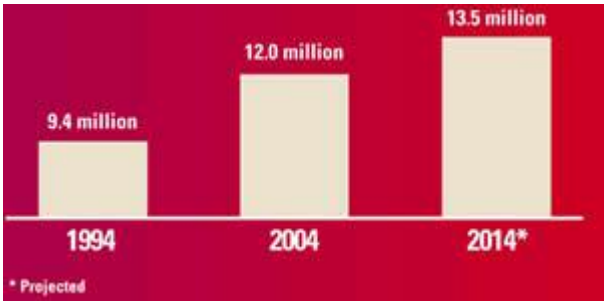
Type of Establishment	2004 Estimated Sales (Billions)
Commercial	$403
Eating Places	$306
Drinking Places	$14
Managed Services	$29
Hotel/Motel Restaurants	$20
Retail, Vending, Recreation, Mobile	$34
Other	$37

Locations Forecast



(Source: National Restaurant Association)

Forecast of Number of Employees



(Source: National Restaurant Association)

APPENDIX B

Company Classification

Quick Service Segment Company Name	Full Service Segment Company Name
1 ARK Restaurants Corp.	1 Angelo & Maxies Inc.
2 Back Yard Burgers Inc.	2 Applebees Intl Inc.
3 Boston Restaurant Assoc. Inc.	3 Benihana Inc. – CLA
4 CBRL Group Inc.	4 Bob Evans Farms
5 CEC Entertainment Inc.	5 Brinker Intl Inc.
6 Checkers Drive-in Restaurant	6 Champps Entmt Inc.
7 Chicago Pizza & Brewery Inc.	7 Chefs International Inc.
8 CKE Restaurants Inc.	8 Darden Restaurants Inc.
9 Creative Host Services Inc.	9 Eateries Inc.
10 Diedrich Coffee Inc.	10 Elephant & Castle Group Inc.
11 ELXSI Corp.	11 Elmers Restaurants Inc.
12 Fresh Choice Inc.	12 Family Steak Houses of Fla
13 Good Times Restaurants Inc.	13 Famous Daves Amer. Inc.
14 Jack in the Box Inc.	14 Flanigans Enterprises Inc.
15 Lubys Inc.	15 Frisch's Restaurants Inc.
16 MacDonald Corp.	16 Grill Concepts Inc.
17 Morgans Food Inc.	17 J Alexander Corp.
18 Nathans Famous Inc.	18 Landrys Restaurant Inc.
19 New World Restaurant Group	19 Main Street and Main
20 Papa Johns International Inc.	20 Max & Ermas Restaurants
21 Quality Dinning Inc.	21 Meritage Hospitality Group
22 Sonic Corp.	22 Mexican Restaurants Inc.
23 Wendy's International Inc.	23 Nutrition MGMT SVCS – CLA

Quick Service Segment Company Name	Full Service Segment Company Name
24 World Wide Restaurant Concepts	24 O Charleys Inc.
25 Yum Brands Inc.	25 Outback Stakehouse Inc.
	26 Piccadilly Cafeterias Inc.
	27 Rare Hospitality INTL INC
	28 Ruby Tuesday Inc.
	29 Ryan's Restaurant Group Inc.
	30 Shells Seafood Restaurants Inc.
	31 Start Buffet Inc.
	32 Steak N Shake Corp.
	33 Western Sizzlin Corp.

APPENDIX C

Calculation of the Financial Determinants

From 1999 to 2003

Calculation of Beta

Company Name	Segment	1999	2000	2001	2002	2003	Average
Diedrich Coffee Inc	1	1.3006	1.1379	1.6137	1.5473	1.0696	1.3338
New World Restaurant Group	1	0.8792	0.4398	1.1250	1.4467	2.0309	1.1843
Worldwide Restaurant Concept	1	1.7294	1.3213	1.2394	0.9649	0.5339	1.1578
Outback Steakhouse Inc	2	1.3993	1.2656	0.9180	0.8917	0.8428	1.0635
Good Times Restaurants Inc	1	0.7402	0.8297	1.1277	1.1660	1.0861	0.9899
Sonic Corp	1	1.3589	1.3000	0.9429	0.7003	0.3729	0.9350
Angelo & Maxies Inc	2	1.1361	0.7168	0.9392	0.9725	0.9101	0.9349
Landrys Restaurants Inc	2	1.4952	1.1235	0.7386	0.5037	0.2482	0.8219
O Charleys Inc	2	1.2003	1.0921	0.6706	0.6230	0.4406	0.8053
Mcdonalds Corp	1	0.8908	0.8622	0.6811	0.7417	0.8189	0.7990
Creative Host Services Inc	1	0.7995	0.8782	0.8330	0.6667	0.7220	0.7799
Cec Entertainment Inc	1	1.0410	0.9466	0.6908	0.6581	0.5606	0.7794
Steak N Shake Co	2	1.0875	0.9746	0.6524	0.5296	0.5751	0.7639
Brinker Intl Inc	2	0.9729	0.9246	0.6644	0.6888	0.5180	0.7537
Papa Johns International Inc	1	1.0099	0.9703	0.7350	0.6470	0.3939	0.7512
Boston Restaurant Assoc Inc	1	0.1558	0.7015	0.6239	1.0254	1.1729	0.7359
Famous Daves Amer Inc	2	0.7461	0.7835	0.7769	0.6920	0.6414	0.7280
Shells Seafood Restrnts Inc	2	0.8569	0.7242	1.0802	0.9399	-0.1306	0.6941
Rare Hospitality Intl Inc	2	0.9594	0.6950	0.5466	0.5856	0.5903	0.6754
Checkers Drive-In Restaurant	1	0.7697	0.7813	0.5635	0.4630	0.6958	0.6546
Champps Entmt Inc	2	0.5798	0.7703	0.5250	0.6792	0.7108	0.6530
Fresh Choice Inc	1	0.7370	0.4405	0.4848	0.6105	0.6512	0.5848
Chicago Pizza & Brewery Inc	1	1.0228	0.6089	0.4548	0.3772	0.4479	0.5823
Jack In The Box Inc	1	0.9264	0.7647	0.4611	0.3848	0.3421	0.5758
Cke Restaurants Inc	1	0.5968	0.6693	0.4974	0.3312	0.6342	0.5458
Cbrl Group Inc	1	1.1853	0.7035	0.3283	0.1890	0.1682	0.5148
Applebees Intl Inc	2	0.8595	0.5994	0.4286	0.3440	0.2106	0.4884
Main Street And Main	2	0.8605	0.6379	0.3758	0.1931	0.3627	0.4860
Nathans Famous Inc	1	0.6554	0.4942	0.4507	0.4231	0.3704	0.4788
Elxsi Corp	1	0.3190	0.3373	0.3845	0.6313	0.7148	0.4774
Darden Restaurants Inc	2	0.5047	0.6608	0.4010	0.4432	0.3551	0.4730
Max & Ermas Restaurants	2	0.7847	0.5074	0.3935	0.3461	0.3326	0.4729
Elephant & Castle Group Inc	2	0.3306	0.2863	0.5692	0.5448	0.6278	0.4717
Eateries Inc	2	0.0379	0.3504	0.4682	0.7168	0.7649	0.4676
Ark Restaurants Corp	1	0.7498	0.4822	0.3669	0.3352	0.2673	0.4403
Wendy's International Inc	1	0.5146	0.5998	0.3788	0.3279	0.3476	0.4338
J Alexander Corp	2	0.5283	0.4240	0.2912	0.3680	0.4556	0.4134
Yum Brands Inc	1	0.2679	0.5459	0.4372	0.3762	0.3227	0.3900
Lubys Inc	1	0.5373	0.4142	0.1950	0.2277	0.5718	0.3892
Benihana Inc -Cl A	2	0.6593	0.4398	0.2729	0.2654	0.2469	0.3769
Family Steak Houses Of Fla	2	0.8165	0.0866	0.1219	0.3108	0.4446	0.3561
Flanigans Enterprises Inc	2	0.6303	0.4201	0.2894	0.3304	0.0954	0.3531
Ruby Tuesday Inc	2	0.5978	0.4205	0.1355	0.3197	0.2778	0.3503
Ryan's Restaurant Group Inc	2	0.4565	0.3759	0.1890	0.2194	0.2594	0.3000
Piccadilly Cafeterias Inc	2	0.4461	0.4058	0.5102	0.1452	-0.0615	0.2892
Star Buffet Inc	2	0.3790	0.2734	0.3241	0.2785	0.0412	0.2592
Meritage Hospitality Group	2	0.1949	0.2946	0.0965	0.1302	0.2359	0.1904
Back Yard Burgers Inc	1	0.1036	-0.0278	0.2401	0.2277	0.3936	0.1874
Bob Evans Farms	2	0.3008	0.1060	-0.0018	0.0601	0.0754	0.1081
Frisch's Restaurants Inc	2	0.4379	0.0758	-0.0110	0.0134	-0.0086	0.1015
Nutrition Mgmt Svcs -Cl A	2	-0.5153	-0.1285	0.1403	0.0167	0.6284	0.0283
Mexican Restaurants Inc	2	-0.1174	-0.1045	0.0258	0.1256	0.1930	0.0245
Grill Concepts Inc	2	0.3431	0.1339	0.0006	-0.1262	-0.2773	0.0148
Western Sizzlin Corp	2	0.1416	0.1539	-0.6033	-0.0831	-0.5248	-0.1832
Morgans Foods Inc	1	-0.3106	-0.3962	-0.2561	-0.3838	-0.1071	-0.2908
Elmers Restaurants Inc	2	-0.6163	-0.6119	-0.3598	-0.1729	-0.0308	-0.3583
Chefs International Inc	2	-1.3103	-0.8809	-0.5291	-0.2448	0.1004	-0.5729
Quality Dining Inc	1	0.0144	-0.6234	-0.9216	-0.7370	-0.6641	-0.5864

(1) Quick-service segment (2) Full-service segment

Calculation of ROI – ratio

Company Name	Segment	1999	2000	2001	2002	2003	Average
Yum Brands Inc	1	0.3424	0.1990	0.2971	0.2015	0.1946	0.2469
Applebees Intl Inc	2	0.1505	0.1697	0.1642	0.1867	0.1947	0.1732
Cec Entertainment Inc	1	0.1601	0.1659	0.1630	0.1539	0.1545	0.1595
Ruby Tuesday Inc	2	0.1223	0.1586	0.1978	0.1704	0.1424	0.1583
Outback Steakhouse Inc	2	0.1746	0.1688	0.1333	0.1450	0.1553	0.1554
Flanigans Enterprises Inc	2	0.3081	0.1522	0.1431	0.0922	0.0560	0.1503
Papa Johns International Inc	1	0.1614	0.1003	0.1571	0.1788	0.1503	0.1496
Jack In The Box Inc	1	0.1467	0.1674	0.1213	0.1367	0.0967	0.1338
Darden Restaurants Inc	2	0.1100	0.1397	0.1268	0.1327	0.1253	0.1269
Benihana Inc -Cl A	2	0.1345	0.1492	0.1359	0.1135	0.0896	0.1245
Sonic Corp	1	0.1179	0.1306	0.1191	0.1344	0.1200	0.1244
Bob Evans Farms	2	0.1222	0.1232	0.1030	0.1222	0.1274	0.1196
Brinker Intl Inc	2	0.1009	0.1351	0.1283	0.1088	0.1129	0.1172
Wendy's International Inc	1	0.1100	0.1077	0.1152	0.1027	0.0963	0.1064
Rare Hospitality Intl Inc	2	0.0754	0.0966	0.0906	0.1032	0.1110	0.0954
Steak N Shake Co	2	0.1150	0.1161	0.1115	0.0679	0.0598	0.0941
Ryan's Restaurant Group Inc	2	0.0913	0.0885	0.0910	0.0964	0.0901	0.0915
Mcdonalds Corp	1	0.1218	0.1114	0.0883	0.0496	0.0707	0.0884
Elmers Restaurants Inc	2	0.0280	0.0873	0.0733	0.0781	0.1098	0.0753
Frisch's Restaurants Inc	2	0.0541	0.0715	0.0775	0.0786	0.0907	0.0745
Cbrl Group Inc	1	0.0636	0.0526	0.0506	0.0939	0.1085	0.0738
O Charleys Inc	2	0.0821	0.0750	0.0552	0.0757	0.0423	0.0661
Worldwide Restaurant Concept	1	0.0928	0.0337	0.0346	0.0570	0.0931	0.0623
Chicago Pizza & Brewery Inc	1	0.0322	0.0966	0.1017	0.0250	0.0506	0.0612
Elxsi Corp	1	0.2710	0.1500	-0.1143	-0.0075	-0.0048	0.0589
Landrys Restaurants Inc	2	0.0407	0.0282	0.0473	0.0549	0.0508	0.0444
Max & Ermas Restaurants	2	0.0174	0.0064	0.0714	0.0850	0.0408	0.0442
Back Yard Burgers Inc	1	-0.0378	0.0328	0.0650	0.0850	0.0723	0.0435
Chefs International Inc	2	0.0196	0.0335	0.0404	0.0983	-0.0419	0.0300
Star Buffet Inc	2	0.0689	0.0393	0.0424	0.0485	-0.0530	0.0292
Mexican Restaurants Inc	2	0.0357	0.0374	0.0399	0.0837	-0.0584	0.0277
Ark Restaurants Corp	1	0.1242	-0.0718	-0.1728	0.1365	0.1036	0.0239
J Alexander Corp	2	-0.0059	0.0088	0.0047	0.0461	0.0555	0.0218
Champps Entmt Inc	2	-0.4404	0.0484	0.2245	0.0733	0.1717	0.0155
Nathans Famous Inc	1	0.1035	-0.0348	0.0436	0.0334	-0.0864	0.0119
Creative Host Services Inc	1	-0.0522	-0.0035	0.0228	0.0584	0.0228	0.0097
Grill Concepts Inc	2	-0.0788	-0.0021	0.0437	0.0087	0.0452	0.0034
Meritage Hospitality Group	2	0.0143	-0.0638	0.0172	0.0178	0.0168	0.0004
Good Times Restaurants Inc	1	0.0094	-0.0411	-0.0116	0.0343	-0.0391	-0.0096
Lubys Inc	1	0.1018	0.0292	-0.1068	-0.0569	-0.0192	-0.0104
Main Street And Main	2	0.0193	0.0435	-0.0013	-0.1051	-0.0255	-0.0138
Morgans Foods Inc	1	-0.0388	0.0055	-0.0331	0.0123	-0.0264	-0.0161
Famous Daves Amer Inc	2	-0.2060	0.0489	0.1325	-0.0144	-0.0454	-0.0169
Western Sizzlin Corp	2	0.0082	-0.0852	0.0138	-0.0721	0.0151	-0.0241
Nutrition Mgmt Svcs -Cl A	2	-0.0117	0.0109	-0.0242	-0.0228	-0.0757	-0.0247
Quality Dining Inc	1	-0.0121	-0.0671	-0.1160	0.0407	0.0077	-0.0293
Checkers Drive-In Restaurant	1	-0.3681	0.0311	0.0471	-0.0193	0.1609	-0.0297
Boston Restaurant Assoc Inc	1	0.0106	0.0107	-0.6058	0.2151	0.1967	-0.0346
Fresh Choice Inc	1	0.0113	0.0741	0.0434	-0.0594	-0.3046	-0.0470
Cke Restaurants Inc	1	0.0620	-0.0231	-0.2165	-0.1215	0.0446	-0.0509
Family Steak Houses Of Fla	2	-0.0742	-0.0018	-0.0447	-0.0751	-0.1021	-0.0596
Piccadilly Cafeterias Inc	2	0.0260	0.0304	-0.3411	0.0851	-0.4111	-0.1221
Eateries Inc	2	-0.0023	0.0551	-0.0427	-0.6249	@NA*	-0.1537
Diedrich Coffee Inc	1	@NA*	-0.8838	-0.1914	0.0617	-0.0657	-0.2698
Elephant & Castle Group Inc	2	-0.1892	-1.0293	0.0219	-0.2092	0.0364	-0.2739
Angelo & Maxies Inc	2	-0.0456	-0.1456	-0.4677	-0.4414	-0.3894	-0.2979
Shells Seafood Restrnts Inc	2	-0.1358	-1.0879	-0.8538	0.1048	-0.1889	-0.4323
New World Restaurant Group	1	0.0776	0.0736	-0.2816	-8.9198	-0.6027	-1.9306

* Missing Data (1) Quick-service segment (2) Full-service segment

Calculation of D/E (Debt to Equity) - ratio

Company Name	Segment	1999	2000	2001	2002	2003	Average
Piccadilly Cafeterias Inc	2	0.9348	0.8626	1.2711	1.8053	-4.7961	0.0155
Outback Steakhouse Inc	2	0.0045	0.0206	0.0282	0.0303	0.0570	0.0281
Nathans Famous Inc	1	0.0000	0.1023	0.0894	0.0492	0.0748	0.0631
Chefs International Inc	2	0.1511	0.1035	0.0727	0.1330	0.1555	0.1232
Bob Evans Farms	2	0.0550	0.2326	0.2318	0.1229	0.1151	0.1515
Chicago Pizza & Brewery Inc	1	0.2184	0.4028	0.1547	0.0084	0.0022	0.1573
Flanigans Enterprises Inc	2	0.1185	0.2123	0.2205	0.1946	0.1538	0.1799
Cec Entertainment Inc	1	0.2652	0.1866	0.1533	0.1614	0.1650	0.1863
Fresh Choice Inc	1	0.1604	0.1093	0.1386	0.2273	0.3136	0.1898
Rare Hospitality Intl Inc	2	0.3615	0.4303	0.1206	0.0749	0.0784	0.2131
Applebees Intl Inc	2	0.4258	0.3243	0.2293	0.1339	0.0454	0.2317
Elxsi Corp	1	0.2020	0.1763	0.3698	0.2671	0.1853	0.2401
Ruby Tuesday Inc	2	0.3860	0.2923	0.1070	0.0246	0.5009	0.2621
Cbrl Group Inc	1	0.3990	0.3533	0.1485	0.2491	0.2350	0.2770
Brinker Intl Inc	2	0.2990	0.1639	0.2762	0.4544	0.3257	0.3039
Benihana Inc -Cl A	2	0.4517	0.3984	0.3173	0.1000	0.2648	0.3064
New World Restaurant Group	1	1.5189	0.4820	2.1482	@NA*	-2.6926	0.3641
Landrys Restaurants Inc	2	0.1806	0.4253	0.4445	0.3368	0.4990	0.3773
Famous Daves Amer Inc	2	0.3389	0.4989	0.3478	0.3901	0.3776	0.3907
Mexican Restaurants Inc	2	0.6228	0.5575	0.4182	0.2596	0.1739	0.4064
Champps Entmt Inc	2	0.2213	0.6415	0.3831	0.4285	0.3925	0.4134
Angelo & Maxies Inc	2	0.4103	0.6499	1.0164	0.1141	0.1315	0.4644
Creative Host Services Inc	1	0.8834	0.3148	0.3409	0.2807	0.5344	0.4708
Wendy's International Inc	1	0.4256	0.4017	0.6365	0.4739	0.4228	0.4721
Darden Restaurants Inc	2	0.3526	0.4389	0.5144	0.5869	0.5502	0.4886
Good Times Restaurants Inc	1	0.2801	0.4854	0.6709	0.6318	0.3998	0.4936
Worldwide Restaurant Concept	1	0.6222	0.5215	0.5445	0.5315	0.4181	0.5275
Western Sizzlin Corp	2	0.6804	0.5777	0.5010	0.5029	0.3875	0.5299
Diedrich Coffee Inc	1	1.0341	0.7749	0.3931	0.2337	0.2217	0.5315
Back Yard Burgers Inc	1	0.6820	0.5655	0.5450	0.4823	0.3909	0.5331
Steak N Shake Co	2	0.2304	0.2953	0.2061	1.0784	0.9169	0.5454
Sonic Corp	1	0.5372	0.5873	0.6121	0.5303	0.6312	0.5796
J Alexander Corp	2	0.5054	0.4938	0.5837	0.7656	0.5692	0.5835
Papa Johns International Inc	1	0.0213	0.8548	0.5383	1.1487	0.3846	0.5896
Ryan's Restaurant Group Inc	2	0.6083	0.6798	0.5620	0.6303	0.5491	0.6059
Elephant & Castle Group Inc	2	2.3248	-5.4615	1.6734	2.6254	1.8820	0.6088
Frisch's Restaurants Inc	2	0.5367	0.6207	0.5351	0.7303	0.6226	0.6091
Grill Concepts Inc	2	1.1517	1.1147	0.3633	0.2727	0.1704	0.6146
Lubys Inc	1	0.3839	0.5896	0.7450	0.7599	0.7470	0.6451
O Charleys Inc	2	0.6559	0.8519	0.5971	0.5744	0.6915	0.6742
Star Buffet Inc	2	0.8936	0.9456	0.6889	0.5988	0.5236	0.7301
Ark Restaurants Corp	1	0.2644	1.1912	1.3354	0.7382	0.3052	0.7669
Checkers Drive-In Restaurant	1	1.7309	0.7959	0.6191	0.5119	0.3815	0.8079
Jack In The Box Inc	1	1.4008	0.8996	0.6819	0.5379	0.6444	0.8329
Mcdonalds Corp	1	0.6997	0.8556	0.8928	0.9707	0.8121	0.8462
Elmers Restaurants Inc	2	1.3356	1.0103	0.8791	0.6808	0.4894	0.8790
Nutrition Mgmt Svcs -Cl A	2	1.0825	1.1847	1.0084	1.0263	1.1155	1.0835
Main Street And Main	2	1.2177	1.1457	1.2496	1.8744	1.7763	1.4527
Cke Restaurants Inc	1	1.0657	1.3585	1.7861	1.6799	2.1677	1.6116
Boston Restaurant Assoc Inc	1	0.7641	1.0000	4.8936	1.8866	0.9974	1.9083
Shells Seafood Restrnts Inc	2	0.4782	1.2913	2.4007	2.0520	3.4320	1.9309
Max & Ermas Restaurants	2	2.7372	3.6568	3.0684	2.6286	2.2215	2.8625
Morgans Foods Inc	1	14.7179	@NA*	@NA*	@NA*	-8.6413	3.0383
Yum Brands Inc	1	-4.4786	-7.7236	21.6154	4.1162	1.8446	3.0748
Eateries Inc	2	1.4090	1.2087	1.3735	9.5469	@NA*	3.3845
Family Steak Houses Of Fla	2	2.2519	2.5290	2.7756	3.6786	5.7663	3.4003
Quality Dining Inc	1	2.3323	2.8558	5.5707	3.9222	3.2729	3.5908
Meritage Hospitality Group	2	2.5652	4.0223	3.8124	4.2425	4.2465	3.7778

* Missing Data (1) Quick-service segment (2) Full-service segment

Calculation of REC_T (Receivables Turnover) - ratio

Company Name	Segment	1999	2000	2001	2002	2003	Average
J Alexander Corp	2	871.71	814.06	637.80	729.00	312.13	672.94
Morgans Foods Inc	1	725.12	875.47	822.53	547.94	309.50	656.11
Fresh Choice Inc	1	474.81	366.88	324.87	669.21	@NC*	458.94
Lubys Inc	1	778.72	999.76	178.68	65.12	82.59	420.98
Benihana Inc -Cl A	2	364.37	366.61	268.71	198.96	234.21	286.57
Max & Ermas Restaurants	2	232.63	234.27	251.27	358.47	325.70	280.47
Piccadilly Cafeterias Inc	2	108.35	106.36	435.26	388.52	358.72	279.44
Boston Restaurant Assoc Inc	1	308.20	395.38	249.52	191.60	172.74	263.49
Chefs International Inc	2	272.91	268.61	234.38	243.25	279.93	259.82
Chicago Pizza & Brewery Inc	1	235.18	324.12	395.61	180.90	80.44	243.25
Meritage Hospitality Group	2	17.78	107.48	405.88	251.80	310.98	218.78
Cbrl Group Inc	1	216.84	172.91	180.40	225.13	255.99	210.25
Outback Steakhouse Inc	2	151.85	165.34	194.09	207.17	203.12	184.31
Ryan's Restaurant Group Inc	2	233.55	212.01	176.95	123.53	133.95	176.00
Family Steak Houses Of Fla	2	176.44	171.76	192.99	136.27	134.74	162.44
Shells Seafood Restrnts Inc	2	178.12	251.23	86.97	79.98	212.27	161.71
Frisch's Restaurants Inc	2	135.50	130.12	140.82	160.85	192.16	151.89
Darden Restaurants Inc	2	145.40	153.52	132.21	141.02	160.21	146.47
Quality Dining Inc	1	107.23	109.57	111.77	149.99	149.49	125.61
Jack In The Box Inc	1	127.46	143.13	103.35	81.88	71.22	105.41
O Charleys Inc	2	132.37	129.40	88.91	70.79	80.45	100.38
Brinker Intl Inc	2	93.11	103.42	95.48	82.82	90.13	92.99
Worldwide Restaurant Concept	1	69.94	62.05	73.93	117.06	125.95	89.79
Elephant & Castle Group Inc	2	72.29	63.93	80.45	113.35	104.63	86.93
Good Times Restaurants Inc	1	48.34	63.96	105.69	133.35	69.88	84.24
Famous Daves Amer Inc	2	@NC*	139.34	60.26	62.01	72.75	83.59
Bob Evans Farms	2	56.81	62.87	75.08	84.11	95.97	74.97
Main Street And Main	2	51.05	38.60	47.45	94.08	128.61	71.96
Grill Concepts Inc	2	71.19	65.58	72.29	73.49	72.21	70.95
Back Yard Burgers Inc	1	99.64	85.31	60.94	49.17	49.15	68.84
Ruby Tuesday Inc	2	83.53	107.55	74.13	36.91	41.81	68.79
Steak N Shake Co	2	33.31	45.41	44.70	57.06	155.34	67.16
Mexican Restaurants Inc	2	76.06	81.70	65.34	54.91	55.16	66.63
Champps Entmt Inc	2	44.64	77.94	74.02	62.35	63.82	64.56
Eateries Inc	2	71.39	75.04	75.33	35.03	@NA*	64.20
Rare Hospitality Intl Inc	2	84.45	60.84	52.66	54.85	63.06	63.17
Star Buffet Inc	2	60.32	43.48	57.43	65.89	79.91	61.41
Checkers Drive-In Restaurant	1	93.12	48.64	39.97	58.83	65.08	61.13
Creative Host Services Inc	1	33.82	38.55	52.11	71.74	97.15	58.67
Cec Entertainment Inc	1	81.55	52.60	46.10	52.62	53.71	57.32
Elmers Restaurants Inc	2	39.19	75.57	66.46	48.92	50.49	56.12
Flanigans Enterprises Inc	2	82.61	63.25	31.06	37.82	56.06	54.16
Landrys Restaurants Inc	2	42.33	58.81	61.78	53.53	51.21	53.53
Papa Johns International Inc	1	41.61	42.48	41.95	47.31	50.29	44.73
Yum Brands Inc	1	49.51	30.64	29.15	45.23	49.73	40.85
Angelo & Maxies Inc	2	46.50	42.09	46.53	16.79	46.43	39.67
Applebees Intl Inc	2	43.59	38.70	33.13	32.60	32.84	36.17
Diedrich Coffee Inc	1	@NA*	52.62	35.30	31.25	22.94	35.53
Cke Restaurants Inc	1	49.28	41.36	28.69	23.81	30.28	34.69
Ark Restaurants Corp	1	34.66	26.62	29.19	35.75	43.50	33.94
New World Restaurant Group	1	11.34	11.85	33.14	48.42	64.91	33.93
Western Sizzlin Corp	2	58.10	42.41	17.84	17.97	16.56	30.57
Sonic Corp	1	26.57	30.10	28.58	29.23	27.49	28.40
Wendy's International Inc	1	23.79	26.74	26.18	28.36	28.42	26.70
Mcdonalds Corp	1	20.13	18.93	17.72	17.74	21.56	19.22
Elxsi Corp	1	13.80	12.62	16.74	15.57	23.83	16.51
Nathans Famous Inc	1	22.83	18.16	13.41	12.12	12.37	15.78
Nutrition Mgmt Svcs -Cl A	2	5.35	5.30	5.82	4.86	6.30	5.53

* Missing Data (1) Quick-service segment (2) Full-service segment

Calculation of QR (Quick Ratio) - ratio

Company Name	Segment	1999	2000	2001	2002	2003	Average
Chicago Pizza & Brewery Inc	1	0.0917	0.2018	1.2159	3.3475	2.4971	1.4708
Nutrition Mgmt Svcs -Cl A	2	1.2477	1.6365	1.2908	1.3185	0.9991	1.2985
Nathans Famous Inc	1	1.4886	0.7225	1.0386	1.4930	1.3061	1.2098
Chefs International Inc	2	0.6561	1.0870	1.4393	1.3796	1.4007	1.1926
Good Times Restaurants Inc	1	1.2601	1.0965	0.8289	0.9810	1.4923	1.1318
Famous Daves Amer Inc	2	0.1523	0.3084	1.2725	1.3493	1.5905	0.9346
Worldwide Restaurant Concept	1	0.7268	1.6435	0.7762	0.8743	0.6494	0.9340
Elmers Restaurants Inc	2	0.5302	0.8024	0.6721	1.1142	1.5209	0.9280
Flanigans Enterprises Inc	2	0.7293	0.6124	1.2102	0.9179	0.8817	0.8703
Wendy's International Inc	1	1.0214	0.8687	0.6944	0.7486	0.6053	0.7877
Outback Steakhouse Inc	2	0.8022	0.8465	0.7773	0.9187	0.4699	0.7629
New World Restaurant Group	1	0.7119	1.7973	0.6440	0.0879	0.3564	0.7195
Back Yard Burgers Inc	1	0.7946	0.5584	0.7510	0.5709	0.6649	0.6680
Boston Restaurant Assoc Inc	1	1.6965	0.5035	0.1266	0.3362	0.5353	0.6396
Sonic Corp	1	0.4877	0.5930	0.7369	0.5478	0.7750	0.6281
Checkers Drive-In Restaurant	1	0.1710	0.2620	0.6055	1.0162	0.9568	0.6023
Morgans Foods Inc	1	0.4964	0.4480	0.6516	0.7825	0.5553	0.5868
Angelo & Maxies Inc	2	0.1632	0.1135	0.0621	1.3014	1.0012	0.5283
Rare Hospitality Intl Inc	2	0.3238	0.2452	0.5658	0.6821	0.7484	0.5131
Champps Entmt Inc	2	0.5595	0.4343	0.3042	0.6621	0.5001	0.4920
Mcdonalds Corp	1	0.3444	0.5160	0.5782	0.4895	0.4937	0.4844
Creative Host Services Inc	1	0.3000	0.6371	0.6482	0.4176	0.3774	0.4761
Elxsi Corp	1	1.1845	0.3395	0.2905	0.2548	0.3078	0.4754
Western Sizzlin Corp	2	0.2913	0.4517	0.4303	0.4544	0.7392	0.4734
Diedrich Coffee Inc	1	0.2002	0.3734	0.4610	0.6299	0.6903	0.4710
Papa Johns International Inc	1	0.3652	0.5011	0.6149	0.3516	0.3311	0.4327
Grill Concepts Inc	2	0.1984	0.2655	0.6097	0.4405	0.6084	0.4245
Cke Restaurants Inc	1	0.4393	0.3984	0.4361	0.4635	0.3310	0.4137
Fresh Choice Inc	1	0.3525	0.4050	0.6642	0.3701	0.1648	0.3913
Cec Entertainment Inc	1	0.2187	0.4490	0.3835	0.5443	0.3594	0.3910
Steak N Shake Co	2	0.3636	0.2181	0.6497	0.1760	0.4728	0.3760
Main Street And Main	2	0.2573	0.5184	0.5103	0.2762	0.2274	0.3579
Applebees Intl Inc	2	0.2259	0.3642	0.4662	0.3782	0.3368	0.3543
Meritage Hospitality Group	2	0.5932	0.2361	0.4238	0.2427	0.1879	0.3368
Family Steak Houses Of Fla	2	0.2589	0.3464	0.0652	0.5460	0.4415	0.3316
Landrys Restaurants Inc	2	0.2749	0.2917	0.4454	0.2463	0.3665	0.3250
Ruby Tuesday Inc	2	0.2028	0.1122	0.2834	0.6799	0.2688	0.3094
Ark Restaurants Corp	1	0.3909	0.3723	0.2459	0.2522	0.2469	0.3016
Mexican Restaurants Inc	2	0.3337	0.3314	0.2261	0.3057	0.2500	0.2894
Eateries Inc	2	0.2704	0.1353	0.1821	0.5197	@NA*	0.2769
Shells Seafood Restrnts Inc	2	0.3730	0.1450	0.1933	0.4236	0.1836	0.2637
Yum Brands Inc	1	0.2296	0.4095	0.1773	0.2138	0.2574	0.2575
J Alexander Corp	2	0.1209	0.1155	0.1032	0.6071	0.2042	0.2302
Max & Ermas Restaurants	2	0.1634	0.2575	0.2034	0.2807	0.2325	0.2275
Elephant & Castle Group Inc	2	0.2501	0.2892	0.2315	0.1523	0.1922	0.2231
O Charleys Inc	2	0.1514	0.1485	0.2461	0.2577	0.2561	0.2120
Ryan's Restaurant Group Inc	2	0.0810	0.1192	0.3418	0.2230	0.2559	0.2042
Lubys Inc	1	0.0175	0.0255	0.5988	0.2081	0.1640	0.2028
Star Buffet Inc	2	0.3100	0.2536	0.1847	0.1736	0.0704	0.1984
Bob Evans Farms	2	0.4165	0.1163	0.0974	0.1499	0.1426	0.1845
Brinker Intl Inc	2	0.1788	0.1416	0.1853	0.1601	0.2196	0.1771
Darden Restaurants Inc	2	0.1146	0.0891	0.1708	0.3192	0.1214	0.1630
Benihana Inc -Cl A	2	0.1526	0.0958	0.0863	0.2939	0.1284	0.1514
Cbrl Group Inc	1	0.1889	0.1465	0.1116	0.0997	0.0949	0.1283
Jack In The Box Inc	1	0.0877	0.0983	0.1240	0.0955	0.2269	0.1265
Quality Dining Inc	1	0.1089	0.1505	0.1171	0.0820	0.0808	0.1079
Piccadilly Cafeterias Inc	2	0.1420	0.0083	0.0486	0.1696	0.1355	0.1008
Frisch's Restaurants Inc	2	0.0929	0.1015	0.0973	0.0823	0.1015	0.0951

* Missing Data (1) Quick-service segment (2) Full-service segment

Calculation of EBIT_G (Growth on EBIT) - ratio

Company Name	Segment	1999	2000	2001	2002	2003	Average
Mcdonalds Corp	1	1.9110	-0.8110	-1.7890	-0.0820	4.1760	0.6810
Yum Brands Inc	1	1.5000	-0.3100	0.0300	1.3900	0.6500	0.6520
Darden Restaurants Inc	2	0.5320	0.6341	0.4152	0.6544	-0.0306	0.4410
Brinker Intl Inc	2	0.3625	0.4149	0.3532	0.3621	0.2920	0.3569
Wendy's International Inc	1	0.3978	0.2436	0.1923	0.5864	0.3211	0.3483
Outback Steakhouse Inc	2	0.5444	0.2082	-0.0478	0.4579	-0.2487	0.1828
Ruby Tuesday Inc	2	0.1007	0.1564	0.1455	0.2156	0.2438	0.1724
Applebees Intl Inc	2	0.1100	0.0796	0.0545	0.1693	0.2350	0.1297
Cec Entertainment Inc	1	0.1718	0.1969	0.1292	0.0747	0.0689	0.1283
Sonic Corp	1	0.1182	0.1023	0.1254	0.1760	0.0618	0.1167
Rare Hospitality Intl Inc	2	0.0911	0.1255	0.0412	0.0816	0.1036	0.0886
Jack In The Box Inc	1	0.4990	-0.0101	0.0622	0.0944	-0.2143	0.0862
Landrys Restaurants Inc	2	-0.1164	0.0327	0.1690	0.1593	0.1863	0.0862
Bob Evans Farms	2	0.1749	-0.0646	-0.0202	0.1856	0.1511	0.0853
O Charleys Inc	2	0.0658	0.0817	0.0229	0.0700	0.0017	0.0484
Ryan's Restaurant Group Inc	2	0.0463	0.0484	0.0193	0.0654	-0.0336	0.0292
Steak N Shake Co	2	-0.0107	0.0321	0.0026	0.1480	-0.0457	0.0253
Checkers Drive-In Restaurant	1	-0.0080	0.0590	-0.0018	-0.0140	0.0889	0.0248
Champps Entmt Inc	2	-0.0981	0.1702	0.0412	-0.0084	-0.0085	0.0193
Cbrl Group Inc	1	-0.4207	0.0472	0.0220	0.1954	0.2478	0.0183
Diedrich Coffee Inc	1	@NC*	@NC*	0.0500	0.0195	-0.0153	0.0181
Frisch's Restaurants Inc	2	0.0026	0.0132	0.0231	0.0051	0.0271	0.0142
Famous Daves Amer Inc	2	0.0165	0.0320	0.0363	-0.0174	-0.0042	0.0126
Benihana Inc -Cl A	2	0.0170	0.0319	0.0054	-0.0093	0.0090	0.0108
Chicago Pizza & Brewery Inc	1	0.0044	0.0025	0.0331	-0.0226	0.0319	0.0099
J Alexander Corp	2	0.0096	0.0129	-0.0028	0.0176	0.0089	0.0092
Morgans Foods Inc	1	0.0025	0.0319	-0.0016	0.0212	-0.0182	0.0071
Papa Johns International Inc	1	0.2292	0.0407	0.0027	-0.0136	-0.2289	0.0060
Meritage Hospitality Group	2	0.0156	-0.0076	0.0099	0.0143	-0.0085	0.0048
Creative Host Services Inc	1	-0.0017	0.0042	0.0040	0.0090	0.0037	0.0038
Western Sizzlin Corp	2	0.0239	-0.0373	0.0271	-0.0068	0.0059	0.0026
Back Yard Burgers Inc	1	-0.0031	0.0013	0.0107	0.0062	-0.0026	0.0025
Elmers Restaurants Inc	2	-0.0001	0.0085	-0.0003	0.0017	-0.0003	0.0019
Flanigans Enterprises Inc	2	0.0002	0.0012	0.0011	0.0130	-0.0071	0.0017
Boston Restaurant Assoc Inc	1	-0.0006	0.0006	0.0003	0.0104	-0.0044	0.0012
Fresh Choice Inc	1	0.0317	0.0164	-0.0075	-0.0116	-0.0230	0.0012
Grill Concepts Inc	2	0.0027	0.0039	0.0000	-0.0045	0.0037	0.0011
Eateries Inc	2	-0.0106	0.0127	@NC*	@NC*	@NC*	0.0010
Angelo & Maxies Inc	2	0.0282	-0.0592	0.0048	0.0345	-0.0036	0.0009
Worldwide Restaurant Concept	1	0.0016	0.0023	-0.0492	0.0035	0.0447	0.0006
Chefs International Inc	2	0.0043	0.0018	0.0007	-0.0015	-0.0036	0.0003
Good Times Restaurants Inc	1	0.0052	-0.0058	0.0029	0.0049	-0.0076	-0.0001
Elephant & Castle Group Inc	2	-0.0049	-0.0333	0.0478	-0.0067	-0.0036	-0.0001
Nutrition Mgmt Svcs -Cl A	2	0.0018	0.0059	-0.0067	-0.0023	-0.0101	-0.0023
Family Steak Houses Of Fla	2	-0.0041	0.0106	-0.0045	-0.0032	-0.0112	-0.0025
Max & Ermas Restaurants	2	-0.0149	0.0033	0.0107	0.0091	-0.0215	-0.0027
Nathans Famous Inc	1	0.0080	-0.0271	0.0319	-0.0144	-0.0138	-0.0031
Main Street And Main	2	-0.0208	0.0158	0.0066	-0.0190	0.0001	-0.0035
Shells Seafood Restrnts Inc	2	-0.0111	-0.0356	0.0113	0.0245	-0.0136	-0.0049
Mexican Restaurants Inc	2	-0.0041	-0.0089	0.0004	0.0030	-0.0152	-0.0050
Ark Restaurants Corp	1	-0.0076	-0.0350	-0.0044	0.0296	-0.0180	-0.0071
Star Buffet Inc	2	-0.0031	-0.0034	0.0074	-0.0085	-0.0313	-0.0078
New World Restaurant Group	1	0.0370	0.0162	0.0145	-0.0278	-0.0826	-0.0085
Quality Dining Inc	1	-0.0094	0.0164	-0.0300	0.0214	-0.0567	-0.0116
Elxsi Corp	1	0.0111	-0.0330	-0.0475	0.0086	-0.0225	-0.0166
Piccadilly Cafeterias Inc	2	-0.0846	-0.0103	-0.0565	0.0813	-0.0916	-0.0324
Cke Restaurants Inc	1	0.8203	-0.6986	-0.8673	0.3347	0.0345	-0.0753
Lubys Inc	1	-0.0163	-0.1474	-0.4056	0.0241	0.0641	-0.0962

* Missing Data (1) Quick-service segment (2) Full-service segment

Calculation of CAP (Capitalization) - $ in millions

Company Name	Segment	1999	2000	2001	2002	2003	Average
Mcdonalds Corp	1	544.5413	443.6660	339.0013	203.9266	313.3298	368.8930
Yum Brands Inc	1	58.3238	48.5100	71.8320	71.2068	100.4480	70.0641
Wendy's International Inc	1	24.6066	29.9801	30.6795	31.0471	45.0071	32.2641
Darden Restaurants Inc	2	23.7816	22.1473	26.8507	40.6239	33.7323	29.4271
Brinker Intl Inc	2	15.8981	27.8288	29.6139	31.4244	32.4487	27.4428
Outback Steakhouse Inc	2	20.0767	19.8285	26.3427	26.1331	32.8387	25.0439
Cbrl Group Inc	1	5.6887	11.3977	16.1999	15.1470	18.3258	13.3518
Applebees Intl Inc	2	7.8461	7.9285	12.7262	12.8450	21.7129	12.6118
Cec Entertainment Inc	1	7.6315	9.3997	12.0360	8.3691	12.1442	9.9161
Ruby Tuesday Inc	2	6.7552	5.5657	9.5555	13.1250	11.0371	9.2077
Jack In The Box Inc	1	7.9183	11.2887	10.8089	6.6667	7.7509	8.8867
Sonic Corp	1	5.2959	6.1479	9.6786	8.1429	12.0475	8.2625
Bob Evans Farms	2	10.4993	5.4738	7.4176	8.6720	8.0543	8.0234
Papa Johns International Inc	1	7.6118	5.1171	6.0860	5.0298	6.0461	5.9782
Cke Restaurants Inc	1	15.2633	2.9669	1.3888	4.5772	2.4632	5.3319
Rare Hospitality Intl Inc	2	2.6486	4.1849	4.8488	6.0684	8.2483	5.1998
Ryan's Restaurant Group Inc	2	3.0477	2.9437	6.6128	4.8516	6.3267	4.7565
Landrys Restaurants Inc	2	2.1565	2.1364	4.1023	5.8986	7.1126	4.2813
O Charleys Inc	2	2.0346	2.7973	3.4045	3.8676	3.9944	3.2197
Steak N Shake Co	2	3.2723	2.0007	3.1099	2.6958	4.8318	3.1821
Lubys Inc	1	2.5503	1.3452	1.2804	0.6528	0.8286	1.3315
Chicago Pizza & Brewery Inc	1	0.0885	0.2321	0.6108	1.3320	2.9316	1.0390
Benihana Inc -Cl A	2	0.6356	0.8876	0.7007	1.1164	1.1829	0.9046
Champps Entmt Inc	2	0.4076	0.8016	1.0852	1.1578	0.9509	0.8806
Frisch's Restaurants Inc	2	0.6233	0.4710	0.7518	0.7587	1.0273	0.7264
Checkers Drive-In Restaurant	1	0.2112	0.3542	0.6661	0.7680	1.2536	0.6506
Worldwide Restaurant Concept	1	0.6480	0.7017	0.4162	0.3237	0.7216	0.5622
Famous Daves Amer Inc	2	0.1839	0.2804	0.8173	0.3582	0.5653	0.4410
Main Street And Main	2	0.3258	0.4257	0.6942	0.2998	0.4188	0.4329
Elxsi Corp	1	0.5504	0.3824	0.3069	0.1023	0.1797	0.3044
Max & Ermas Restaurants	2	0.1949	0.2108	0.3017	0.3452	0.4471	0.2999
Quality Dining Inc	1	0.2710	0.2523	0.2548	0.3390	0.2783	0.2791
Ark Restaurants Corp	1	0.2830	0.1710	0.2593	0.1925	0.4565	0.2724
J Alexander Corp	2	0.2116	0.1585	0.1496	0.2165	0.4645	0.2401
Angelo & Maxies Inc	2	0.5225	0.4718	0.1067	0.0676	0.0280	0.2393
Nathans Famous Inc	1	0.2022	0.2200	0.2473	0.2465	0.1980	0.2228
Meritage Hospitality Group	2	0.1654	0.0891	0.2156	0.2671	0.2519	0.1978
Creative Host Services Inc	1	0.2731	0.2095	0.0976	0.1521	0.2092	0.1883
New World Restaurant Group	1	0.2263	0.1733	0.0472	0.0536	0.3691	0.1739
Piccadilly Cafeterias Inc	2	0.4201	0.1444	0.1722	0.1304	0.0000	0.1734
Diedrich Coffee Inc	1	0.2508	0.0355	0.2010	0.1791	0.1982	0.1729
Back Yard Burgers Inc	1	0.0678	0.0305	0.1839	0.1831	0.2947	0.1520
Fresh Choice Inc	1	0.1368	0.0984	0.1595	0.1145	0.1052	0.1229
Mexican Restaurants Inc	2	0.1394	0.0795	0.1135	0.1232	0.1317	0.1175
Flanigans Enterprises Inc	2	0.0890	0.0708	0.1067	0.1175	0.1262	0.1020
Star Buffet Inc	2	0.1934	0.1027	0.0756	0.0690	0.0670	0.1015
Grill Concepts Inc	2	0.0751	0.1209	0.0720	0.0803	0.1412	0.0979
Elmers Restaurants Inc	2	0.0793	0.0916	0.0956	0.0960	0.1072	0.0940
Western Sizzlin Corp	2	0.1362	0.0529	0.0548	0.0887	0.0774	0.0820
Boston Restaurant Assoc Inc	1	0.0882	0.0836	0.0703	0.0633	0.0528	0.0717
Eateries Inc	2	0.0871	0.0753	0.0676	0.0460	0.0000	0.0690
Good Times Restaurants Inc	1	0.0486	0.0306	0.0538	0.0537	0.0921	0.0558
Morgans Foods Inc	1	0.0637	0.0767	0.0184	0.0423	0.0381	0.0478
Shells Seafood Restrnts Inc	2	0.0974	0.0306	0.0178	0.0290	0.0278	0.0405
Chefs International Inc	2	0.0323	0.0337	0.0323	0.0000	0.0535	0.0379
Family Steak Houses Of Fla	2	0.0226	0.0181	0.0325	0.0182	0.0296	0.0242
Elephant & Castle Group Inc	2	0.0300	0.0018	0.0155	0.0185	0.0170	0.0166
Nutrition Mgmt Svcs -Cl A	2	0.0145	0.0107	0.0085	0.0057	0.0057	0.0090

(1) Quick-service segment (2) Full-service segment

VITA

Silvio Ceschini

Candidate for the Degree of

Master of Science

Thesis: ANALIZING RISK IN THE RESTAURANT INDUSTRY

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Biographical:

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