Underlying Risk Dimensions in the Restaurant Industry:
A Strategic Finance Approach

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(ABSTRACT)

One of the keys for restaurant managers in conducting a proper assessment of their business opportunities is through understanding the level of risk these opportunities bear. This can be achieved by analyzing the causal relationships between external environmental forces and internal capabilities of the firm, and then make a strategic choice in what opportunities to invest.

The purpose of this study was to investigate the concept of risk and its underlying dimensions that influence the restaurant industry's cash flows and stock returns. This study proposed a contemporary framework that enables restaurant industry executives to develop a better understanding of the risk factors (macroeconomic and industry) that influence their firms' cash flows and stock returns.

The primary unit of analysis was at industry (portfolio) level. In addition, as a second step, three restaurant firms were selected to demonstrate the practical application of the model. Exploratory factor analysis indicated that the restaurant industry risk is represented by three dimensions: "Output," "PPI Meats," and "IP Restaurants." The macroeconomic risk construct was represented by the five variables of Arbitrage Pricing Theory of Chen et al. (1986).

Time series-analysis regression of the portfolio of 75 restaurant firms, for the 1993-2004 period, revealed that macroeconomic variables explained a significant portion of restaurant stock returns. On the other hand, both macroeconomic and industry models explained a significant level of variation in operating cash flows. The addition of September 11 "dummy" variable improved the explained variation in stock returns for both equations (macroeconomic and industry).

At a firm level, the industry model accounted for a significant variation in internal value drivers (operating cash flows, food cost, and labor cost) for all three restaurant companies. The industry risk model survived after controlling for the effect of macroeconomic variables on operating cash flows. The results indicate that the industry model provides a parsimonious solution in estimating variation in operating cash flows by capturing macroeconomic effects.

DEDICATION

I dedicate this dissertation to the inspiration of my life: my grandfather Hikmet Beytullov.
Rest in peace Hikmet abba!

You ushered my trail of light
You brought my dreams within a sight
I cherish the lessons you taught
Which give me strength to fight.

I will carry on…the show must go on!

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CHAPTER 1

INTRODUCTION

Business executives of publicly-traded companies need to satisfy the basic imperative to grow shareholder value to ensure the long-term viability of their firms. This must be accomplished through investing in competitive methods which produce cash flows that are above the cost of capital over the economic life of these methods (Olsen, West, & Tse, 1998). These strategic choices must be the result of environmental activities that allow managers to identify the forces that drive change and evaluate the opportunities available (Olsen et al., 1998). Further, these managers should be able to assess the uncertainty and complexity of these business opportunities. One of the keys in conducting a proper assessment of these opportunities is through understanding the level of risk these opportunities bear by looking at the causal relationships between external environment forces and internal capabilities of the firm, and make a strategic choice in what opportunities to invest.

The urgency of this issue was emphasized by De Noble and Olsen (1986) who reported some alarming findings for the restaurant industry. They stated that 40% of the chief financial officers (CFOs) did not consider risk at all in their capital investment decisions. The authors concluded that hospitality executives fail to see anything other than a limited, narrow window of the business environment. Almost two decades after this study, the picture of the industry is not much different. There is a void in the body of hospitality management literature explaining what internal and external factors drive hospitality industry stock returns and firm cash flows.

This study attempts to utilize the theories and practices in the strategic management and corporate finance fields to fill this void in the hospitality literature by proposing a model that is

going to assist restaurant industry executives in understanding which macroeconomic and industry-specific factors influence the stock returns and cash flows of the restaurant firms.

Lubatkin and Schulze (2003) pointed out, that, at times, the fields of financial and strategic management treat the issue of risk differently. In practice, since the field of strategy is about seizing competitive advantage and the field of finance is, at least in part, about capitalizing upon those advantages, it would seem that these two fields should have many common approaches about risk and risk management. However, fundamental differences in the theoretical assumptions on which modern financial theory and strategy are based, caused their paths to diverge to a point where endorsement of one necessarily implies the irrelevance of the other (Lubatkin, Schulze, McNulty, & Yeh, 2003).

Problem Statement

In today's turbulent and fiercely competitive environment, more than ever, managers need to make strategic choices that create sustainable competitive advantage, and add value to their respective firms. These strategic choices can not be properly made without a precise estimate of the risk involved in these capital investment decisions as executives and their respective firms compete for sources of capital available at the markets.

The present accounting and finance practices fall short in enlightening restaurant executives' understanding of the concept of risk. Portfolio theory suggests that only market-wide factors are important in assessing the risk of the security returns from an investor's perspective. The theory is based on the premise that all the investors are wealth maximizers, everybody holds an efficient portfolio, and the covariance of stock returns with the market returns is the sole measure of risk (Lintner, 1965; Sharpe, 1964). Reliance on portfolio theory

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alone, at times, severely restricts management's ability to estimate and understand the risk of an investment opportunity. As a result, there is a need to utilize contemporary financial management models that go beyond the assumptions of portfolio theory and reflect the realities of the business environment in which the firms operate. The contemporary models relaxed some of the assumptions of perfect capital markets and considered information asymmetry (Myers & Majluf, 1984), agency costs (Jensen & Meckling, 1976), transaction costs (Constantinides, 1986), and taxes (Miller, 1973) as important factors that affect risk and return of individual companies.

Purpose of the Study

The purpose of this study is to investigate the concept of risk and its underlying dimensions that influence the restaurant industry's cash flow and stock returns. This study proposes a contemporary framework that will enable restaurant industry executives to develop a better understanding of the risk factors (macroeconomic and industry) that influence their firms' cash flow and stock returns. If, executives understand these causal relationships they can assess the sources that create risk in their operations and make rational decisions to invest in the competitive methods (portfolios of products and services) that will enable their firms to gain and sustain a competitive advantage over their competitors.

Research Questions and Guiding Theories

In an effort to better understand the concept or risk and its underlying dimensions, the present study poses the following empirical questions:

1. What are the underlying risk dimensions in the restaurant industry?

2. How do macroeconomic indicators affect the stock returns and firm cash flows in the restaurant industry?

3. How do restaurant industry risk variables affect the overall risk in the restaurant industry?

4. How do external industry value drivers affect internal value drivers of individual restaurant firms?

5. Do external industry value drivers explain the variation in operating cash flows after controlling for macroeconomic variables?

Swanson (1988) maintains that the objective of applied research is to "formulate concepts and methods and the invention of devices and techniques that can be used as inputs into some human-originated process, product, or event" (p.70). The primary objective of empirical research in any field is to test new theories that contribute to existing theory or disconfirm an existing theory. In order to achieve this goal, researchers need to base their approach on certain distinct philosophies that either permeate through a given research domain or are a result of the researcher's own philosophical orientation towards research as suggested by Chathoth (2002). The present research is based on the recommendations of Montgomery, Wernerfelt, and Balakrishnan (1989) that will serve as a guideline to the orientation towards research, i.e. (a) all theory generation should be based on past observations (p.190); (b) strategy content research progresses when data analysis is well-crafted and backed by theory (p.193); (c) all observations should be guided by and interpreted through some theory (p.190); and (d) the sciences should be undertaken for the sake of ultimate application (p.191).

The underpinning theories that drive this scholarly work are drawn from two fields: strategic management and finance. The primary theories and principles borrowed from financial management field are the CAPM (Lintner, 1965; Sharpe, 1964) and the Arbitrage Pricing Theory

(Ross, 1976). On ther other hand, the Industrial Organization Paradigm (Bain, 1956; Mason, 1949), Porter's (1980) Five Forces and the Co-alignment Principle (Bourgeois 1980; Chandler, 1962; Hambrick, 1988; Olsen et al., 1998; Prescott, 1986; Rumelt, 1974) are theoretical underpinnings of strategic management that are used in this study.

Context of the Study

Overview of the Restaurant Industry

The context of this study entails the restaurant industry. This study investigates the macroeconomic and industry-specific factors affecting security returns and firm cash flows of publicly-traded restaurant firms. Beginning in the 1950s, the restaurant industry surfaced as one of the fastest growing industries in the U.S. The industry's estimated total sales for the nation's 900,000 restaurants are estimated to hit $476 billion in 2005 (National Restaurant Association, 2005). Industry sales are expected to reach $576.9 billion by 2010. This marks a 45% increase over the revenue in 2001 ($399 billion) (National Restaurant Association, 1999, 2001). According to the research of the National Restaurant Association (NRA) (1999), consumers will spend 53% of every food dollar including meals, snacks, and beverages away from home by 2010. This is more than double the rate reported in 1955 (25%). Some of the reasons that drove the tremendous growth of the restaurant industry are tight working schedules, increasing number of working housewives, and increasing disposable income (Sheridan & Matsumoto, 2000). The rapid expansion of the restaurant industry led to the development of several types of restaurants in order to accommodate the wants and needs of the different markets. As a result, the restaurant industry is now comprised of full-service restaurants, limited-service, and quick-casual restaurants (Technomic, Inc., 2003). Full-service segment can be further broken down into

casual dining, fine dining, and family dining. On the other hand, limited service includes fast food, cafeterias, and buffets.

Fast food is the largest segment in the restaurant industry with projected sales of $144 billion for 2004 (National Restaurant Association, 2005). The fast-food restaurants gained a wide popularity among consumers because of its conveniences which allow people to eat fast without prior planning, dressing up, and having to get out of their cars (Fieldhouse, 1995). However, in the recent years the fast-food segment has encountered several market challenges such as increasing consumer health concerns, a high employee turnover, and a fierce competitive environment (Kalinowski, 2002; Leidner, 2002; Leung, 2003; Ramseyer, 2001). Olsen and Zhao (2001) attributed this to the fact that restaurant industry has been undergoing a transformation which dramatically changes the risk features the restaurant industry faces. Therefore, it is vital to investigate the effects of these forces which are driving change on stock returns and firm cash flow in the restaurant industry.

The recent struggles of the fast-food segment left the door wide open for the expansion of the casual-dining restaurant segment. Casual-dining restaurants' total sales reached $65 billion in 2002, which represents approximately 15% of the total restaurant industry (Miller, 2003). Miller (2003) projected that the casual-dining segment's sales are to increase to $92 billion by 2007.

The fast-casual restaurant chains managed to carve out a niche in between the fast-food and casual-dining segments and recorded robust sales growth that ranged between 6% and 8% annually since 2000 (Brumback, 2002). Consumer demand for bakery-cafe and quick-casual offerings created a $5.2 billion category in the restaurant industry (LaVecchia, 2003). The sales

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of the fast-casual segment are expected to reach $35 billion by the end of this decade (Ballon, 2002; Mcpherson, Mitchell, & Mitten, 2003).

Current Status of the Industry

Chicago-based foodservice consulting company Technomic (2005) reported that the 500 largest U.S. restaurant chains had their best performance in more than a decade, reporting over 8% annual sales growth in 2004. The U.S. systemwide sales for the Top 500 restaurant chains rose to an estimated $187.3 billion in 2004, which marks an increase of $14 billion over 2003 on a same-chain basis. A significant portion of this growth came from the limited-service hamburger and beverage categories with McDonald's and Starbucks posting 2004 double-digit sales growth of 10.3% and 29.8%, respectively. McDonald's growth came from strong same-store-sales performance. Whereas, Starbucks added 965 U.S. units, raised prices and benefited from a growing consumer trend toward specialty frozen beverages.

The quick-casual segment sales grew by an average of 7.5% and this growth was propelled by Bakery Café chains (22%). Panera Bread Co. increased its sales by 27% and Quiznos grew by 37%. Within full-service segments, the Steak and Italian categories posted strong sales growth rates of 10.7% and 10.4% compared to an overall full-service growth rate of 6.8%. Applebee's Neighborhood Grill & Bar, which increased sales by 10.5%, led the casual-dining restaurants (Technomic, 2005).

Contribution to the Literature

This study contributes to the body of knowledge by proposing an industry-specific model that better reveals the overall picture of risk and its factors that influence the company stock returns and cash flows in the context of the restaurant industry. The study contributes to the

body of knowledge by providing a full spectrum of risk variables that reflect the realities of today's business environment.

The following section provides an overview of the concepts covered in strategic management and corporate finance literature that are utilized as a foundation in building the contemporary risk-model for the restaurant industry. This is followed by an introduction to the contextual framework that provides a basic understanding of the domain in which the model is validated. Subsequently, the research design is discussed briefly to provide the reader with a synopsis of what is covered in the methodology section.

CHAPTER 2

LITERATURE REVIEW

The present study aims to unify two world views shared by financial and strategic management. While some of the corporate finance students who rely on traditional financial theories are mainly concerned with the market and market factors affecting security returns, intermediate work in the strategic management field revolved around one of three themes: (1) the effects of the environment on strategy, (2) the importance of the fit between strategy and environment and (3) the effects of strategy on performance (Hoskisson, Hitt, Wan, & Yiu, 1999). Owing to its roots as a more applied area, strategic management has traditionally focused on business concepts that affect firm performance. This section evaluates and critiques the works undertaken in the domains of financial and strategic management fields. This section is organized as follows: definition of risk, risk in financial economics and strategic management, risk-return relationship, risk factor models, industry effect on risk, firm-specific risk, risk studies in hospitality literature, co-alignment principle, competitive methods, value drivers and synthesis.

The Concept of Risk

It is useful to first define the risk concept and highlight some of the conceptual confusion surrounding existing definitions because, more often than, not risk and uncertainty were used interchangeably. Risk represents the "probability distribution of the consequences of each alternative" (March & Simon, 1958, p. 137). In the field of financial management, risk is defined as " dispersion of unexpected outcomes due to movements in financial variables" (Jorion, 2001). In the hospitality field, risk is often defined as the variation in returns (probable outcomes) over the life of an investment project (Choi, 1999; Olsen et al., 1998). These

variations are higher whenever there is an increased uncertainty in the environment. Thus, according to March and Simon (1958), *uncertainty* is present when "the consequences of each alternative belong to some subset of all possible consequences, but that the decision maker cannot assign definite probabilities to the occurrence of particular outcomes" (1958, p. 137). That means that if management is unsure of the value of the information used as a basis for the environmental investigation of their business, there exists uncertainty. The uncertainty of the market and other industry-specific factors create risks to the restaurant firms.

The concept of risk is at the foundation of every firm as it seeks to compete in its business environment. According to financial theory, (total) risk is composed of two components, systematic and unsystematic risk. The examples of systematic risk could be changes in monetary and fiscal policies, the cost of energy, tax laws, and the demographics of the marketplace (See Table 1). Finance scholars refer to the variability of a firm's stock returns that moves in unison with these macroeconomic influences as systematic, or stockholder, risk (Lubatkin & Chatterjee, 1994). Stated differently, the level of a firms' systematic risk is determined by the degree of uncertainty associated with general economic forces and the responsiveness, or sensitivity, of a firm's returns to those forces (Helfat & Teece, 1987). On the other hand, a loss of a major customer as a result of its bankruptcy represents one source of unsystematic, or firm-specific risk (idiosyncratic or stakeholder risk). Other sources include the death of a high-ranking executive, a fire at a production facility, and the sudden obsolescence of a critical product technology (Lubatkin & Chatterjee, 1994). Other types of risk which are related to tax credits, bankruptcy, country, call options, inflation, interest rates etc. are defined in Table 1.

Table 1. Risk Definitions

Risk Type	Definition
Systematic Risk (Market Risk, Nondiversifiable Risk)	Risk associated with the movement of a market or market segment as opposed to distinct elements of risk associated with a specific security. Systematic risk cannot be diversified away; it can only be hedged.
Unsystematic Risk (Company-specific Risk, Idiosyncratic Risk)	An element of price risk that can be largely eliminated by diversification within an asset class. In factor models estimated by regression analysis, it is equal to the standard error.
Audit Risk	The risk stemming from faulty audit procedures that fail to uncover a procedural deficiency. (2) The risk stemming from unrealistic expectations of what an audit covers or what an auditor can be e.
Bankruptcy Risk (Default Risk, Insolvency Risk)	The risk that a firm will be unable to meet its debt obligations.
Basis Risk	The possibility of loss from imperfectly matched risk offsetting positions in two related but not identical markets.
Call Risk	A lender's potential opportunity loss associated with premature prepayment of principal on a debt instrument. Call risk is a reinvestment risk, because it is usually impossible to reinvest the funds in a similar instrument with an equal yield.
Country (Sovereign) Risk	Legal, political, settlement, and other risks associated with a cross-border transaction into a specific country.
Credit Risk	Exposure to loss as a result of default on a swap, debt, or other counterparty instrument.
Currency Risk (Foreign Exchange Risk.)	The probability of an adverse change in currency exchange rates.
Downgrade Risk	The risk that an issuer's debt securities' ratings will be lowered because of deterioration in its financial condition.
Event Risk	Exposure to loss from a change in the credit quality of an issue or issuer resulting from a merger or acquisition, leveraged buyout, product failure, or some other development with a major impact on the issuer's business or capitalization.
Inflation Risk	The opportunity cost incurred if the return from investing—typically in a note or bond—does not offset the loss in purchasing power due to inflation.
Interest Rate Risk	An adverse variation in cost or return caused by a change in the absolute level of interest rates, in the spread between two rates, in the shape of the yield curve, or in any other interest rate relationship.
Liquidity Risk	An adverse cost or return variation stemming from the lack of marketability of a financial instrument at prices in line with recent sales.
Operational Risk	The risk of loss that results from operational deficiencies or limitations such as an inadequate disaster recovery plan, an understaffed back office, or a lack of preparation for the year 2000.
Spread Risk	A generalized measure of exposure to changing spreads, usually between government and non-government yields.
Strategic Risks	Risk exposures that are part of an economic unit's natural environment and have a significant effect on its revenues, earnings, market share, product offerings, etc. Strategic risks are usually the primary risk management focus.
Tax Risk	Usually a reference to a tax provision that, by accident or design, frustrates a reasonable business or economic transaction by making the economics unattractive after taxes or by injecting significant tax uncertainty.
Translation Risk	A form of currency risk associated with the valuation of balance sheet assets and liabilities between financial reporting dates.

Source: Gastineau and Kritzman (2001).

Treatment of Risk in Strategy and Finance

The traditional financial theory looks at investment in securities from a portfolio perspective by assuming that investors are risk averse and can eliminate the unsystematic risks (variance) associated with investing in any particular firm by holding a diversified portfolio of stocks (Markowitz, 1952, 1959). Markowitz pioneered the application of decision theory to investment by contending that portfolio optimization is characterized by a trade-off of the reward (expected return) of that individual security against portfolio risk. Since the key aspect to that theory is the notion that a security's risk is the contribution to portfolio risk, rather than its own risk, it presumes that the only risks that matter to investors are those that are systematically associated with market-wide variance in returns (Lubatkin & Schulze, 2003; Rosenberg, 1981). Investors, it argues, should only be concerned about the impact that an alternative investment might have on the risk-return properties of their portfolio. However, the Capital Asset Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964) does not explicitly explain what criteria investors should use to select the alternative investments and how should investors assess the risk features of these investments. Moreover, the CAPM assumes that because investors can eliminate the risks they do not wish to bear, at relatively low costs to them, through diversification and other financial strategies, there is little need therefore for managers to engage in risk-management activities (Lubatkin & Schulze, 2003).

In contrast, the field of strategic management is based on the premise that to gain competitive advantage, firms must make strategic, or hard-to-reverse, investments in competitive methods (portfolios of products and services) that create value for their shareholders, employees and customers in ways that rivals will have difficulty imitating (Olsen et al., 1998). These investments enable the firms to protect their earnings from competitive pressure, and allow firms

to increase the level of their future cash flow, while simultaneously reducing the uncertainty associated with them. The management of firm-specific risk lies at the heart of strategic management theories (Bettis, 1983; Lubatkin & Schulze, 2003), and, from this perspective, management must work hard at avoiding investments that create additional risk for the firm.

As a consequence, executives face an important conundrum, implicit to the CAPM is the recommendation that managers should focus on managing their firm's overall market risk by focusing on beta or the firm's systematic risk and not be concerned with what strategists may focus upon, firm-specific (unsystematic) risk. Chatterjee, Lubatkin, and Schulze (1999) postulate that herein lie two dilemmas: first, decreasing beta requires managers to reduce investors' exposure to macroeconomic uncertainties at a lower cost than what investors could transact on their own by diversifying their own portfolio; and second, to downplay the importance of firm-specific risk which is not only contrary to the strategic management field but also tempts corporate bankruptcy (Bettis, 1983).

Risk in Financial Economics

The second half of the twentieth century produced several competing cost of equity (asset pricing) models that were intended to help managers estimate the value of their respective firms/projects by assisting them in calculating the discount rate (and thus account for the risk involved in that investment) of the project. This section chronologically tracks asset pricing models that achieved acceptance among practitioners and scholars in the financial management field. The empirical movement started with the Dividend Growth Model (DGM) developed by Myron Gordon (1962) and was followed by the Capital Asset Pricing Model (CAPM) of Lintner (1965) and Sharpe (1964). A decade later, Ross (1976) proposed the Arbitrage Pricing Theory. A detailed description of each of these models is provided in the next section.

Dividend Growth Model

One of the early forward-looking methodologies is the Dividend Growth Model (DGM) originally developed by Myron Gordon in 1962. It offers a very parsimonious method for estimating discount rate, and thus, accounts for risk. The dividend growth approach to cost of equity states that:

$$ke = \frac{dps}{p} + g$$

Where, ke is the cost of common equity, dps is the projected dividend per share, p is the current market price per share, and g is the projected dividend growth rate.

The model assumes that over time, successful reinvestment of the value received by retained earnings will lead to growth and growing dividends. The approach suffers from oversimplification because firms vary greatly in their rate of dividend payout (Helfert, 2003). This is due to the fact that common stockholders are the residual owners of all earnings not reserved for other obligations, and dividends paid are usually only a portion of the earnings accruing to common shares. The other major difficulty in applying this model lies in determining the specific dividend growth rate which is based on future performance tempered by past experience.

The Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964) is based on the assumption of a positive risk-return tradeoff and asserts that the expected return of an asset is determined by three variables; beta (a function of the stock's responsiveness to the overall movements in the market), the risk-free rate of return, and the expected market return (Fama & French, 1992). The CAPM builds on Harry Markowitz's (1952, 1959) mean-variance portfolio model in which an investor selects a portfolio at time t-1 that produces a random return (Rpt) at t.

The model assumes that investors are risk averse and, when choosing among portfolios, they are only concerned about the mean and variance of their one-period investment return. This argument is in essence the cornerstone of the CAPM. The model can be stated as

$$E(R_i) = R_f + [\beta * (R_m - R_f)]$$

where, R_m is the market return of stocks and securities, R_f is the risk- free rate, β is the coefficient that measures the covariance of the risky asset with the market portfolio, and $E(R_i)$ is the expected return of i stock.

Early empirical tests of the CAPM employed by Black, Jensen, and Scholes (1972) and Fama and MacBeth (1973) both supported the theory by reporting a positive relationship between beta and average returns for the period of 1926-68. However, in the past two decades, financial economics literature evidenced several empirical studies that yielded more disturbing results. Banz (1981) found that market equity (firm size) added to the explanation of the cross section of expected returns, suggesting that beta is not a sufficient statistic to describe the cross-section of expected returns. Similar effects were found for leverage (Bhandari, 1988), the ratio of book value to common equity (Chan, Hamao, & Lakonishok, 1991; Rosenberg, Ried, & Lanstein, 1985; Stattman, 1980), and earnings-price ratios (Basu, 1983).

Several other empirical studies (e.g. Lakonishok & Shapiro, 1986; Reinganum, 1981) present evidence that the positive relationship between beta and returns could not be demonstrated for the period of 1963-90. Particularly over the last ten years, even stronger evidence has been developed against the CAPM by Fama and French (1992, 1993, 1995, 1996, 1997), and Roll and Ross (1994). These researchers challenged the model by contending that it is difficult to find the right proxy for the market portfolio and that CAPM does not appear to

accurately reflect the firm size in the cost of equity calculation, and that not all systematic risk factors are reflected in returns of the market portfolio.

Another strong statement against beta was made by Downe (2000) who argued that in a world of increasing returns, risk cannot be considered a function of only systematic factors. He postulated that the position of the firm in the industry, as well as the nature of the industry itself become risk factors. Thus, firms with a dominant position in the industry that succeed to adapt to the complexities of the business environment, will have a different risk profile than their competitors.

<center>Arbitrage Pricing Theory</center>

The Arbitrage Pricing Theory (APT) developed by Ross (1976) postulates that factors other than beta affect the systematic risk. Unlike the CAPM, the APT gives up the notion that there is one efficient portfolio for every investor in the world, and is based on the underlying premise that asset returns, Ri, are generated by a factor model that can be stated as

$$R_i = E_i + \sum_{j=1}^{k} b_{ij}\delta_j + \varepsilon_i$$

where, R_i is the uncertain return to asset i, E_i is the expected return to asset i, b_{ij} is the factor loading for asset i related to factor j, or asset i's sensitivity to movements in factor j, δ_j is the factor j ($j=1, \ldots, k$), and ε_i is the error term for asset i. In addition, the model assumes that the factors and error terms have a mean of zero.

The APT depicts a world with many possible sources of risk and uncertainty, instead of seeking for equilibrium in which all investors hold the same portfolio. More formally, the APT

is based upon the assumption that there are some major macroeconomic factors that influence security returns. The APT states that no matter how thoroughly investors diversify, they can not avoid these factors. Thus, investors will "price" these factors precisely because they are sources of risk that cannot be diversified away. That is, they will demand compensation in terms of expected return for holding securities exposed to these risks (Goetzmann, 1996).

There has been a long debate regarding what factors are indeed priced by the investors. In 1986, Chen, Roll, and Ross proposed five risk factors that influence security returns: a) The industrial production index which is a measure of state of the economy based on the actual physical output, b) the short-term interest rate measured by the difference between the yield on Treasury bills and the Consumer Price Index (CPI), c) short-term inflation, measured by unexpected changes in CPI, d) long-term inflation, measured as the difference between the yield to maturity on long- and short-term U.S. government bonds, and e) default risk, measured by the difference between the yield to maturity on Aaa- and Baa-rated long-term corporate bonds (Chen et al, 1986; Copeland et al., 2000).

The APT describes a world in which investors behave intelligently by diversifying, but they may choose their own systematic profile of risk and return by selecting a portfolio with its own peculiar array of betas. The APT allows a world where occasional mispricings occur. Investors constantly seek information about these mispricings and exploit them as they find them. Put in other words, the APT somewhat realistically reflects the world in which we live.

Although the theory provides the benefits explained above those benefits come with some drawbacks. The APT demands that investors perceive the risk sources, and that they can reasonably estimate factor sensitivities. In fact, even professionals and academics are yet to

agree on the identity of the risk factors, and the more betas they have to estimate, the more statistical noise they have to put up with.

Risk in Strategic Management

Risk is an essential element of strategic management and figures prominently in many empirical studies of industry, firm, and business unit performance (e.g., Bettis & Mahajan, 1990). Ruefli, Collins, and Lacugna (1999) argue that much of the research in strategic management relies on measures and techniques borrowed from adjacent disciplines, most notably financial economics and statistical decision theory. As discussed in the previous section, recent developments in financial economics and management science added urgency to the search for measures of risk relevant to strategy.

Bettis (1983) further affirms that the CAPM's emphasis on the equilibration of returns across firms (i.e., systematic risk), relegates to a secondary role strategy's central concern with managerial actions that seek to delay the calibration of returns (i.e., unsystematic risks). Thus, the claim that systematic risk is paramount to the firm is undermined by the two arguable assumptions from portfolio theory: stockholders are fully diversified, and the capital markets operate without such imperfections as transaction costs and taxes. Some stockholders, however, are not fully diversified, particularly corporate managers who have heavily invested, both financially and personally, in a single company (Vancil, 1987). Also, transaction costs, such as brokerage fees, act as a minor impediment, inhibiting other stockholders from completely eliminating unsystematic risk (Constantinides, 1986). Finally, taxes make all stockholders somewhat concerned with unsystematic risk (Amit & Wernerfelt, 1990; Hayn, 1989) because interest on debt financing is tax deductible, thereby allowing firms to pass a portion of the cost of capital from their stockholders to the government. Thus, firms can, within limits, create value

for their stockholders by financing investments with debt rather than equity (Kaplan, 1989;

Smith, 1990). The limits are determined in part by the amount a firm is allowed to borrow and

the terms of such debt, both of which are contingent upon the unsystematic variation in the firm's

income streams. Lubatkin and Chatterjee (1994) contend that the debt markets favor firms with

low unsystematic risk because they are less likely to default on their loans (this is particularly

the case of the hospitality industry firms). In summary, the discussion of partially diversified

stockholders, transaction costs, and leverage suggests that some stockholders may be concerned

with unsystematic risk and factor it along with market risk to determine the value of a firm's

stock (Amit & Wernerfelt, 1990; Aron, 1988; Lubatkin & Schulze, 2003; Marshall, Yawitz, &

Greenberg, 1984).

Risk and Return

Risk and Return in Financial Management

Investors make their investment decisions based on the risk/return relationship. As a

result, the wealth of the investors is dependent upon the maximization of future cash flow and

minimization of the variability of future cash flow (Gu, 1993; Olsen et al., 1998). That means

that in the case of restaurant firms, risk-averse investors will prefer to invest in restaurant firm

stocks with higher return but lower variability over the ones with lower return and higher

variability (Kim & Gu, 2003). Generally, business practitioners use three major risk-adjusted

performance measures that have their roots in the 1960's, namely: Jensen Index (Jensen, 1968),

Sharpe Ratio (Sharpe, 1966), and Treynor Index (Treynor, 1965). All these measures are built

on Markowitz's (1952, 1959) mean-variance paradigm, which assumes that the mean and

standard deviation of the distribution of one-period return are sufficient statistics for evaluating the prospects of an investment portfolio.

In the beginning of the 1990s the world of finance witnessed the emergence of some innovative risk-adjusted performance measures such as Sortino Ratio (Sortino & Van der Meer, 1991), the Fouse Index (Sortino & Price, 1994), and Upside Potential Ratio (UPR) (Sortino, Van der Meer, & Plantinga, 1999). These measures were built on the assumptions of downside risk (deviation). The difference between measures based on standard deviation and downside deviation is that downside risk uses an exogenous reference rate versus the mean return. The investor's objective function motivates the choice of the reference rate. As a result, a part of the investor's preference function is introduced into the risk calculation. Investors with different minimal acceptable rates of return (MAR) will have different rankings of their respective portfolios or individual stocks (Plantinga & de Groot, 2001). Sortino and Van der Meer (1991) state that realizations above the reference point imply that goals are accomplished and, therefore, are considered "good volatility" (also referred to as "upside volatility"). Thus, only realizations below the reference point imply failure to accomplish the goals and should be considered "bad volatility" or risk.

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The use of downside risk in the hospitality industry was advocated by Johnson, Olsen and Van Dyke in 1986. In their study, the authors illustrated why solely looking at traditional risk adjusted performance measures (such as variance, mean and standard deviation) may not tell the whole story because it is not known whether the variability of stock return is below or above the mean. The authors suggested that semi-variance, which measures the variance below the expected return, should be used in lieu of traditional risk adjusted performance measures.

Risk and Return in Strategic Management

The relationship between risk and return is a central concern of strategic management and has been extensively studied (Baucus, Golec, & Cooper, 1993; Bowman, 1980, 1982, 1984; Bromiley, 1991; Fiegenbaum & Thomas, 1986, 1988; Fiegenbaum, 1990; Miller & Bromiley, 1990; Miller & Leiblein, 1996; Ruefli, 1990; Wiseman & Bromiley, 1991). Drawing from finance theory, scholars originally assumed a positive association between risk and return but starting with Bowman (1980) strategic management researchers have found more complex relations. Some have found negative relations between corporate risk and return for all or subsets of firms (Bowman, 1980, 1982, 1984; Bromiley, 1991; Fiegenbaum & Thomas, 1986, 1988; Wiseman & Bromiley, 1991). In contrast, others have argued that corporate risk and return correlate positively and that findings of negative associations come from research design problems, including the use of biased return measures (Baucus et al., 1993), risk measures that fail to capture the conceptualization of risk used by managers (Miller & Leiblein, 1996), and artifactual measures of risk (Ruefli, 1990, 1991; Ruefli & Wiggins, 1994). Miller and Bromiley (1990), and Wiseman & Catanach (1997) further argued that risk indeed is multidimensional and that risk-return relations vary across those dimensions. In a review of these studies McNamara and Bromiley (1999) concluded that overall, basic questions about risk-return relationship remain unanswered since empirical results vary substantially across studies.

The majority of the studies cited thus far used accounting measures to assess the risk-return relationship and did not touch upon risk measures in market terms. Fiegenbaum and Thomas (1986) conducted the only study which investigated the risk-return relationship in market terms in the strategic management field. Ruefli et al. (1999) conjectured that the reason why was very little investigation of that relationship in the strategic management literature is the

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positive nature of risk and return, as determined in financial economics, and this was generally unequivocally accepted by strategic management researchers.

However, not all students of risk supported its positive nature (i.e. the higher the risk, the the higher the return). Another set of studies, beginning with Armour and Teece (1978) and Bowman (1980), employing similar measures, found evidence of a negative mean-variance relationship within and across industries. From a set of 85 industries, Bowman found negative relationships between risk and return in 56 industries, positive relationships in 21, and no relation in 8 of the industries. This finding was in conflict with the financial economic theory since the theory assumes a positive relationship between risk and return. The finding of a negative relationship was deemed a 'paradox.' In a subsequent paper, Bowman (1982) presented two explanations of the apparent negative risk-return relationship: (1) exceptionally skilled strategic decision-making might well increase return at the same time it lowered risk; and (2) managers of 'troubled ' firms, that is, firms experiencing below-median returns, may actively seek risky, high-return projects to augment sagging performance.

Bowman's findings stimulated other strategic management researchers to examine Bowman's results from several new perspectives. Fiegenbaum and Thomas (1986) found that the risk-return paradox disappeared when market-based risk measures similar to those suggested by the CAPM were utilized, and that the risk-return relationship, as measured by Bowman, was not stable over time. Fiegenbaum and Thomas (1986) also suggested that environmental factors may be responsible in part for the lack of stability in the observed risk-return relationship. They noted a positive relationship during a period of assumed relative stability (1960-69), and a negative relationship during a period of assumed relative instability (1970-79).

In a later study, Fiegenbaum and Thomas (1988) attempted to explain the risk- return paradox by appealing to prospect theory of Kahneman and Tversky (1979) which states that investors evaluate gains and losses from a subjective reference point. In that framework, the function relating the subjective value and the corresponding losses is steeper than that for gains. As a result, the displeasure associated with the loss is greater than the pleasure associated with the same amount of gains. Thus, after assuming median return to be an industry-wide 'target' for managers, Fiegenbaum and Thomas (1988) suggested that the relationship is positive for firms above industry targets, and negative for firms below industry targets. This finding is compatible with the predictions of both prospect theory and Bowman's 'troubled firm' explanation (1980, 1982). Authors argued that the assumption that performance targets are framed by the average rate of return in a firm's primary industry merits conceptual justification, particularly since managers often appear to benchmark top performers and mobilize their firms to avoid performance below targets which is line with the prospect theory.

Other studies yielded results in which the negative relationship was found to be contingent on firm performance (Chang & Thomas, 1989), diversification pattern (Amit & Livnat, 1988a, 1988b, 1988c; Bettis, 1981; Bettis & Hall, 1982; Bettis & Mahajan, 1985), industry membership (Bettis & Mahajan, 1985), or firm structure (Hoskisson, 1987). Jegers (1991) found the same relationship in a study of Belgian firms. Jemison (1987) examined the impacts of risk and return on strategy content, decentralization, environmental interaction, sub-unit interdependence, and process differences in a sample of banks. Baucus, Golec, and Cooper (1993) attempted to explain the risk-return paradox in terms of accounting reporting periods. Rueffli et al. (1999) pointed out that the research of the risk-return relationship came to a halt in

the strategic management literature due to the conflicting past results and models borrowed from the financial economics field.

A number of strategic management researchers employed Jensen's alpha either alone or in conjunction with other risk measures. Amit and Wernerfelt (1990) used both unsystematic risk and Jensen's alpha and found that business risk has a negative effect on firm value (Tobin's Q) (Tobin, 1958). In their review, Ruefli et al. (1999) argued that Amit and Wernerfelt' finding by elimination -that the negative effect of business risk on firm value (Tobin's q) is through cash flow- may have been arrived at through the artifact of an inefficient market index proxy as discussed by Roll and Ross (1994).

Hoskisson, Hitt, Johnson, and Moesel (1993) used the Sharpe Ratio, the Treynor measure, and Jensen's alpha (all these measures were discussed in the financial economics section). Ruefli et al. (1999) reiterated that the first measure runs into mean-variance problems, while the last two have CAPM problems. Nayyar (1992) used both an accounting equivalent to systematic risk to adjust returns for risk and Jensen's alpha to measure risk. He reported that customer focus was positively related to risk-adjusted returns, market value and risk, whereas a focus on either internal capabilities or geographic regions was negatively related to the same three performance measures.

Drawing on corporate finance methods, Naylor and Tapon (1982) proposed that the CAPM should be the tool of choice in making the strategic management decisions if a principal organizational goal is the maximization of shareholder value. They noted that while variation of the market rate of return is clearly beyond managerial control, strategies could be created to either alter the firm's variation of returns or to alter the covariation of the firm's return with that of the market. Then the managers' hope will be that these actions affect a firm's beta, and thus

force an adjustment in the market price of the firm's stock. While Boardman and Carruthers (1985) elaborated and refined on that assessment, Wernerfelt (1985) and Robins (1992) raised fundamental questions about the applicability of the CAPM for project selection. The findings of the seminal works in the finance area by Fama and French (1992, 1993, 1996) and Roll and Ross (1994) provided additional reasons for the CAPM to be eschewed by strategic management researchers in their evaluation of internal capital allocation decisions.

Variance is the second (after beta) most widely used measure of risk in the strategic management literature. Ruefli et al. (1999) reported that use of variance as a measure of risk in the strategic management literature exhibited peaks in 1988 and 1991 and has since declined. The majority of articles employing variance as a measure of risk sought to estimate the risk-return relationship in variance-mean terms at the business unit, corporate, and cross-industry levels of analysis. Using accounting measures (mean-variance) of business level return and risk, Conrad and Plotkin (1968), Cootner and Holland (1970), McEnally and Tavis (1972), and Marsh and Swanson (1984) all found positive associations between return and risk, although Conrad and Plotkin's relationship was across industries and not within firms.

Findings in the management science literature regarding methodological problems in estimating risk-return relationships in mean-variance terms had specific importance to studies such as those cited above. Ruefli et al. (1999) made a claim that most of these studies do not make explicit assumptions about the nature and stability of the return distributions they consider. If indeed they allow for shifting distributions over time, then their results may suffer from the identification problem highlighted by Ruefli's study conducted in 1990. If instead they assume stable return distributions, then Ruefli and Wiggins' (1994) findings indicate that their results are most likely due to spurious correlation, the influence of a few outlier firms, and a negative bias

from violating regression assumptions. Moreover, this mean-variance approach to measuring risk assumes an artificial symmetry between positive and negative variance, that variance above the mean is comparably significant to managers, investors and other agents as variance below the mean. Yet, in reality, this claim is highly questionable as outlined in the discussion of downside risk in the previous section. It appears that managers and investors have distinctly asymmetric views of variations above and below the mean.

MacCrimmon and Wehrung (1986), March and Shapira (1987), and Shapira (1986) found that for managers "there is little inclination to equate the risk of an alternative with the variance of the probability distribution of possible outcomes that might follow the choice of the alternative." March and Shapira (1987) emphasized that, in contrast to financial management, "most managers do not treat uncertainty about positive outcomes as an important aspect of risk," and for the managers in the studies "risk is not primarily a probability concept." The managers, in Shapira's (1986) study, viewed uncertainty as a factor in risk, but the magnitudes of possible bad outcomes seemed more salient to them. This asymmetry between positive and negative outcomes against targets highlights the conceptual inadequacies of most current measures of risk within the organizations.

March and Shapira's findings were echoed loudly by Baird and Thomas (1990: 40), who surveyed 670 financial analysts concerning their definitions of risk. The first four definitions of risk, ordered in terms of frequency, were (1) size of loss, (2) probability of loss, (3) variance, and (4) lack of information. Thus, variance -the measure used widely by researchers- was placed third for practitioners and barely eclipsed the fourth place measure (lack of information) (Ruefli et al., 1999).

Industry Membership and Return

The claim that a given firm's performance is partly dependent upon the industry it operates in has its roots in the industrial organization economics (IO) paradigm. This view argues that a firm's market position within an industry depends principally on the characteristics of the environment in which it competes (Matovic, 2002). The basic model in industrial economics follows from the structure–conduct–performance (SCP) framework. According to this perspective, firm performance depends on its conduct in matters such as pricing policy, R&D, and investment policy. Firm conduct, in turn, depends on industry structure, which includes concentration level, barriers to entry, and degree of product differentiation (Scherer & Ross, 1990). Within this line of reasoning the structural characteristics of industries affect both the conduct, that is, the strategy of firms and their performance (Bain, 1959). Hence, competitive market structure can be thought of as the overarching economic and technical parameters that establish an industry's environmental boundaries (Chang & Singh, 2000; Hall, 1987; Porter, 1979a).

Despite limitations regarding the specification of relevant measures and data quality (Scherer & Ross, 1990), this stream of empirical research has generally revealed the existence of important relationships between industry structure and profitability. Industry membership was seen as one of the major determinants of profitability differences among firms. The paradigmatic notion here is that industry structure determines profitability. In effect this means that high-profit firms are found in high-profit industries with favorable competitive strategy effects on firm performance. This phenomenon has been the subject of inquiry in the strategic management literature. Results along this line of research provide evidence supporting the impact of strategy on profitability.

For the most part, companies within an industry have little or no control over its environment (at least in the short term) (Matovic, 2002). Accordingly, the classical IO perspective takes a deterministic view of a firm's maneuverability within this environment, and its implications regarding financial performance (Bain, 1956; Mason, 1949). Following in this tradition, Porter (1979b) stated that the distribution of profits for all industry members are impacted by two broad sets of influences:

a. Common industry-wide structural traits such as overall economic growth, and the generalized buyer purchasing behavior for that product. These factors will tend to either raise or lower the average profit potential for the industry as a whole.

b. Profitability of the individual firm will also depend on its market position within its industry and the competitive structure of the market. These structural factors include: the level of competition, the barriers to entry, the firm's growth rate, and its market share.

In 1980, Porter further refined his industry structure framework and postulated that industry structure consists of the following five forces:

1. Entry Barriers

- Economies of scale
- Proprietary product differences
- Brand identity
- Switching costs
- Capital requirements
- Access to distribution
- Absolute cost advantages
- Proprietary learning curve
- Access to necessary inputs
- Proprietary low-cost product design
- Government policy
- Expected retaliation

2. Supplier Power

- Differentiation of inputs

- Switching costs of suppliers and firms in the industry
- Presence of substitute inputs
- Supplier concentration
- Importance of volume to supplier
- Cost relative to total purchases in the industry
- Impact of inputs on cost or differentiation
- Threat of forward integration relative to threat of backward integration by firms in the industry

3. Buyer Power

    A. Bargaining Leverage

- Buyer concentration versus firm concentration
- Buyer volume
- Buyer switching costs relative to firm switching costs
- Buyer information
- Ability to backward integrate
- Substitute products
- Pull-through

    B. Price Sensitivity

- Price / total purchases
- Product differences
- Brand identity
- Impact on quality / performance
- Buyers profits
- Decision makers' incentives

4. Rivalry

- Industry growth
- Fixed (or storage) costs/value added
- Intermittent over capacity
- Product differences
- Brand identity
- Switching costs
- Concentration and balance
- Informational over complexity
- Diversity of competitors
- Corporate stakes
- Exit barriers

5. Substitution Threats

- Relative price performance of substitutes
- Switching costs
- Buyer propensity to substitute

It should be noted that the majority of the variables listed under the five forces are not only difficult to quantify but are also sometimes impossible to analyze on a time-series basis. As a result, the present study may not be able to capture all five forces in the task environment and may focus on suppliers. The relevance of Porter's (1980) framework is supported by Olsen et al. (1998) who suggest that managers in the hospitality industry should understand the power of both supplier and buyer elements as these relationships will affect the demand and pricing issues as well as cost efficiencies of their firms. If a firm is dependent on a single item (e.g. beef meat in hamburger chains and cheese in pizza chains) then the executives of the firms which belong to these segments should clearly monitor who the major suppliers of these key items are. Another aspect of the Porter's (1980) five forces -the buyers- emerges as one of the forces driving change in the hotel industry through the issue of capacity management. Olsen et al. (1998) state that since hotel and restaurant industries are in the maturity stage of the industry life cycle, the threat of substitutes becomes even more imminent. One can choose to hold a celebration party at home by using the services of a caterer instead of going to a restaurant. The threat of substitutes for the hospitality industry is even more exacerbated due to the relatively lower barriers to entry. Therefore, hospitality managers need to identify the interdependencies among these elements in their industry domain in order to build competitive advantage.

Porter's (1979b; 1980) position is supported by several studies that attempted to partition the variance in profitability that is due to the industry, corporate parent, and business-unit effects. The first of these studies is the one conducted by Schmalensee (1985) who decomposed

variances in profitability across firms from the 1975 Federal Trade Commission (FTC) line of

business data (the dataset included only manufacturing firms). He concluded that industry effect

accounted for about 20% of the business-unit performance and firm effects had no impact on

variation. The author measured heterogeneity of the participants in the same industry by a single

indicator: market share. Market share positively affected business unit profits by a negligible

amount.

Similarly, Rumelt (1991) reanalyzed the FTC data from 1974 to 1977 via time-series

analysis and confirmed the conclusions made in Schmalensee's study. Rumelt's study reported

business-units effects to explain 44-46% of the variation in profits, whereas stable and transient

industry effects accounted for a total of 9-16% of variation. Both of these studies did not make

any claims regarding economic or organizational processes underlying these results. In a more

recent study, McGahan and Porter (1997) found that variation in year effects, stable industry

effects, stable corporate-parent effects, and segment-specific effects accounted for 2%, 19%, 4%,

and 32% respectively. Particularly, the industry-effects accounted for more than 40% of the

variation in profits in the wholesale/retail and lodging/entertainment industries. In addition,

authors discovered that covariance between stable industry effects and stable-corporate parent

effects was negative. Their results supported Schmalansee's (1985) claim that industry effects

contribute importantly to the variation in business-specific profitability. On the other hand,

McGahan and Porter (1997) called into question Rumelt's (1991) argument that stable industry

effects have low influence on firm profits.

In the financial management research arena, King's (1966) seminal study queried the

effect of the industry risk on an individual company stock. Put more precisely, he researched

what portion of a stock's return is attributable to overall market factors, industry factors, and the

firm stock's unique component. The author used 63 NYSE stocks from 6 industries for the 1927-1960 period and divided it into four sub periods. For the entire examination period, the researcher found that 52% of the stock price variation was explained by the market and 10% was explained by industry influence. However, the range of results among firms was quite dispersed: for some, market movements explained 70% of the individual stock return, while on the other hand, for others the value was merely 25%.

Brown and Ball (1967) looked at the relationship of the earnings for an individual firm, other firms in the industry and all firms in the economy. They reported that 30-40% of the firm's earnings were explained by variability of the overall economy and 10-15% was explained by the variability of industry earnings.

In 1973, Meyers followed up on King's study by analyzing a higher number of firms in 12 additional industries (which included less homogeneous and distinct industry groups). Meyers's (1973) results revealed that market effect weakened as the time progressed. While it was an important determinant of firm stock price variation, it accounted for 25-30% of individual stock variance in 1970s. However, market factor still varied among securities ranging from 5% to 50%. Meyers concluded that conducting an industry analysis is still important but it differs across industries. Meyers's study was followed by Livingston (1977) who used 50 companies in 10 industry groups and studied monthly returns from January 1966 through June 1970. He also found strong comovement among stocks in the same industry and concluded that 18% of residual variance was accounted for by industry effects. The author concluded that Sharpe's single-index model (i.e. CAPM) does not pick up the comovement of securities' rate of return and stocks and thus multi-index (non-orthogonal) models should capture more of the comovement of the stocks than CAPM does.

According to Barad and McDowell (2002), industry risk plays an important part in explaining the competitive environment in which a company participates. Therefore, most appraisers make an industry-based adjustment in calculating firm's cost of equity. In the past, measuring industry risk has been a qualitative analysis and subject to the judgment of the appraiser. To address the problems inherent in this type of subjective approach, Ibbotson has developed industry risk premia for use in the buildup model using a method that is more quantitative and objective in nature. Although the model utilizes a full-information method by maintaining the pure-play firms and adjusting the effect of multi-industry corporations, the model does not explicitly state what industry-wide factors are driving stock returns.

Firm-Specific Factors and Risk

With the recent development of the resource-based view (RBV) of the firm (e.g., Barney, 1991; Wernerfelt, 1984) in strategic management, the emphasis on firms' internal strengths and weaknesses relative to their external opportunities and threats has increased considerably. Theoretically, the recent rise of the RBV (e.g., Barney, 1991; Conner, 1991; Wernerfelt, 1984),) have returned attention to the internal aspects of the firm. Internal firm characteristics represented the critical research domain in the early development of the field.

In fact, early strategy researchers, such as Andrews and his colleagues (Learned et al., 1965/1969) and Ansoff (1965), were predominantly concerned with identifying firms' "best practices" that contribute to firm success. This emphasis on internal competitive resources can be traced to the early classics such as Chester Barnard's (1938) *The Functions of the Executive*s, Philip Selznick's (1957) *Leadership in Administration: A Sociological Perspectiv*e, or Edith Penrose's (1959) *The Theory of the Growth of the Firm*. Researchers in this stream share an

interest in pondering the inner growth engines or "the black box" of the firm, and argue that a

firm's continued success is chiefly a function of its internal and unique competitive resources.

A firm's resources and capabilities 'are valuable if, and only if, they reduce a firm's costs or

increase its revenues compared to what would have been the case if the firm did not possess

those resources' (Barney, 1997, p. 147). In the hospitality strategic management literature, this

was further confirmed by Olsen et al. (1998) where the researchers introduced terms such as core

competencies, critical success factors, and competitive methods. Hoskisson et al. (1999)

contended that because of the focus on a firm's idiosyncratic resources, generalizability of firm

knowledge may be questionable. Further, the authors argue that although strategic management

has advanced theoretically through the RBV, the methods that complement this theoretical view

are less certain and need further development.

The preceding discussion seems to endorse the claims of Bettis (1983) and Lubatkin and

Schulze (2003) that managing idiosyncratic risk lies at the heart of competitive strategy. Amit

and Wernerfelt (1990) also affirm that theorists depicted the management of unsystematic risk as

the focal point of the organizational evolution – a determinant of which organizations survive

and grow and which decline and ultimately die (Child, 1972; Summer, 1980).

Amit and Wernerfelt (1990) stated that organizations have three motives for firm-specific

risk reduction that are not mutually exclusive. The first one is concerned with the conflict of

interest between managers and shareholders where the formers' role is to act as shareholders'

agents. The authors labeled this as agency motive for firm-specific risk reduction. According to

that motive, managers seek to reduce the probability of bankruptcy in an effort to increase their

job security and preserve their investment in firm-specific human capital. Thus, managers may

take a variety of idiosyncratic risk-reducing business actions at the expense of shareholders

(Holmstrom, 1979). In their study, Amihud and Lev (1981) claimed that reduction of unsystematic risk may be detrimental to shareholders. According to this motive, a positive relationship should exist between unsystematic risk and firm value.

The second motive is referred to as cash flow motive. This motive is derived from the effect of uncertainty about the operations of a firm on its cash flows. Amit and Wernerfelt (1990) argued that firms that have stable demand for their products and services should achieve more stable cash flows, and thus reduce business risk. In that case, it is in the best interest of shareholders that firms reduce unsystematic risk (Amihud, Dodd, & Weinstein, 1986; Aron, 1988; Marshall et al., 1984). The authors hypothesized that a negative relation should exist between cash flows and firm-specific risk.

The third motive is related to transaction costs, such as brokerage fees and time costs, that may prevent investors from diversifying away business risk completely (Constantinides, 1986). In that case, shareholders are willing to accept lower returns on stocks with lower firm-specific risk. In such a setting, Amit and Wernerfelt (1990) expected a positive relationship between required rate of return and unsystematic risk.

The result of their study indicated that lowering unsystematic risk, ceteris paribus, allows firms to increase cash flows, and thus create shareholder value. These findings suggested that not all risk reduction methods are counter to stockholders' interest. The logical explanation of this phenomenon is that risk reduction is something valuable for both managers and company investors since it results in enhanced operational efficiency.

The financial management field, by virtue of its adherence to modern financial theory (Markowitz, 1952, 1959), tended to ignore firm-specific factors in security returns since idiosyncratic risk can be diversified away in an efficient portfolio. However, in recent years

several studies pointed out the importance of idiosyncratic risk on the market (e.g. Campbell,

Lettau, Malkiel, & Xu, 2001; Malkiel, Burton, & Xu, 2001). Arguably, the strongest case

against half-a-century old portfolio theory was made recently by Goyal and Santa-Clara in 2003.

The authors found a significant positive relationship between average stock variance and the

return on the market. Thus, researchers stated that there exists a trade-off between risk and

return in the stock market, where risk is measured as total risk (which includes idiosyncratic risk)

rather than being measured as only systematic risk as financial theory maintains. Further, they

reported that the variance of the market by itself has no forecasting power for the market return.

These relationships persisted even after authors controlled for macroeconomic variables known

to forecast the stock market (according to APT). Finally, their study showed that idiosyncratic

risk explains most of the variation of average stock risk through time and it is idiosyncratic risk

that drives the forecastability of the stock market. At the beginning of the new millennium this is

a very strong statement that offers some hope that financial and strategic management are getting

closer in bridging the gap between firm-specific risk and systematic risk. The present study

serves both as a messenger and pioneer for both strategy and financial management fields in the

context of the restaurant industry.

Risk in Hospitality Research

Apparently the concept of risk did not seem to be a major concern on the hospitality

researchers' agenda until De Noble and Olsen (1986) observed market volatility in the

foodservice industry. This was one of the early studies that attempted to investigate the concept

of risk within the strategic management framework by looking at the relationship between the

market volatility of the foodservice industry and the environmental scanning efforts of managers

in their strive to assess the volatility in the business environment. Their findings revealed that

almost half of the foodservice executives (N=231) who participated in that study did not make any attempt to evaluate the environmental conditions, demographics trends, technological changes, social/cultural trends, and political/legal factors. Particularly, technological changes and political/legal factors made the bottom on the managers' list as 61.5% of the managers did not spend any effort to scan technological changes and 62.5% of them ignored monitoring political/legal factors. Based on these results one would think that the foodservice industry has enjoyed a very stable environment at that time. Yet, the market volatility analysis produced distressing results by demonstrating that foodservice firms had the highest coefficient of market volatility (.3634) among the seven industries included in the study. De Noble and Olsen's study was one of the early endeavors that highlighted the crucial importance of linking the foodservice industry's risk with the capital investment decisions.

Huo and Kwansa (1994) compared the betas of hotel, restaurant and utility firms for the recessionary period of 1990-1991 as determined by the degree of financial leverage (DOL) and degree of operating leverage (DOL). Their study selected a sample of 20 restaurants, 7 hotels, and 15 utility companies. The researchers reported that DFL and DOL accounted for 5% and 16% of the variation in beta for restaurants. Whereas, the R-squared statistic for hotels for 1990 and 1991 was considerably higher than for restaurants (.13 and .45, respectively). In the case of utilities, DFL and DOL explained 46% and 71% of the change in the systematic risk for the two examination years (1990 and 1991). This study yielded very intriguing results since restaurant firms were the riskiest group (had the highest beta) but at the same time restaurant companies had little control over DFL and DOL during recession. The authors suggested that restaurant managers should adjust their DFL and DOL prior to the onset of recession.

The last decade saw several studies that investigated the risk and return in the hospitality industry. This line of research was launched by Gu (1993) who used Sharpe Ratio to evaluate risk-adjusted performance of hospitality firms. His study was followed by Kim, Mattila, & Gu (2002) who examined hotel real estate investment trusts (REITs) risk-adjusted performance by utilizing Jensen Index. In 2003, Kim and Gu conducted a sector analysis of restaurant firms in terms of their risk-adjusted performance. All of the studies cited above used risk-adjusted performance measures, based on traditional mean-variance methods, such as Sharpe Ratio, Treynor and Jensen Indices. The semi-variance measure (e.g. downside risk-upside volatility) was recently introduced to hospitality management literature by Madanoglu and Lee (2004) who investigated risk-return features of fast-food and casual-dining restaurants.

To date, only two studies looked at how macroeconomic variables affect security returns in the hospitality industry (hotels and restaurants). The first study was conducted by Barrows and Naka in 1994. Their study encompassed the 27-year period between 1965 and 1991 and employed five factors that were slightly different that the five factors of Chen et al. (1986). Barrows and Naka postulated that return of the stocks is a function of the following five factors:

Return = f (EINF, M1, CONN, TERM, IP),

where EINF is expected inflation, M1 denotes money supply, CONN is domestic consumption, TERM is the term structure of interest rates, and IP is industrial production. The results revealed that none of the macroeconomic factors was significant in explaining the variance of hotel stocks at .05 level and the factors accounted for the 7.8% of the variance in the lodging stocks. Whereas, EINF, M1, and CONN had significant effect on the variation of the stock returns in the restaurant industry. In terms of the signs of the beta coefficients EINF had a negative relationship with the restaurant stock returns. On the other hand, M1 and CONN had a

positive relationship with the restaurant stock returns. The postulated model explained 12% of the variance in the restaurant stocks. The authors cautioned that the results should be interpreted with care due to the small sample size of both restaurant and hotel portfolios which were represented by 5 and 3 stocks respectively.

The second study was undertaken by Chen, Kim and Kim (2005) who used hotel stocks listed on Taiwan Stock Exchange. The macroeconomic variables included in their study were industrial production (*IP*), consumer price index (*CPI*), unemployment rate (*UEP*), money supply (*M2*), 10-year Government bond yield (*LGB*), and 3-month Treasury bill rate (*TB*). These variables were used in the following way: *CPI* was utilized to estimate expected inflation (*EINF*) and *LGB* and *TB* were used for the computation of the yield spread (*SPD*). Based on these six time series data the authors arrived to the common five macroeconomic variables which were predominanantly used in the literature (namely, ΔIP (change in industrial production, *EINF* (expected inflation), ΔUEP (change in unemployment rate) , $\Delta M2$ (change in money supply), and *SPD* (rate of the yield spread)). These five variables explained merely 8 percent of the variation in hotel stock returns while only two of these variables were significant at .05 level ($\Delta M2$ and ΔUEP). The regression coefficient of change in money supply had a positive relationship with hotel stock returns; whereas, on the other hand, the relationship between change in unemployment rate and lodging returns was negative.

Sheel and Wattanasuttiwong (1998) examined the relationship between the debt/equity ratio and risk/size-adjusted returns of the 37 firms in the restaurant industry for the 1992-1996 period. The regression analysis indicated that financial leverage does influence the risk/size-adjusted stock returns of restaurant companies. The authors also concluded that the premium

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associated with beta is more than just some kind of risk premium captured by restaurant firms' beta.

Gu and Kim (1998) researched risk features of 35 casino firms for the 1992-1994 period. They employed four variables as determinants of a firm's systematic risk: current ratio, leverage ratio, asset turnover, and profit margin. Their findings revealed that casino firms' beta was 1.79 and less than 7% their total risk was systematic. In addition, only one variable (asset turnover) was significant at .10 level. Apparently, their study failed to shed any light into risk characteristics of the casino firms.

In 1998, Borde examined how financial characteristics of a restaurant firm can be utilized in assessing investment risk. The researcher employed liquidity, dividend-payout ratio, leverage, operating returns (Return on Assets), and growth opportunities (which is defined as the average growth rate in earnings before interest and taxes for firm j over the study period) on a sample of 52 restaurants for the 1992-1995 period. The independent variable in this study was risk which was measured as systematic risk (beta) and total risk (standard deviation of firm j's monthly holding period return).

Borde concluded that both regression equations (on systematic and total risk) yielded similar results. Fifty-four percent of the variation in the systematic risk and 59% of the variation in total risk was explained by the model. The author reported that both models are similar and essentially tell the same story. Liquidity had the highest t-value and was significant at .01 level. The level of liquidity was positively related to systematic and total risk. Growth opportunities had the same sign as total risk which led Borde to believe that firms with growth opportunities might fail due to inadequate resource allocation which may be caused by this growth. However, this argument contradicts with strategic management literature because the growth firms are

expected to make efficient resources allocation decisions while pursuing and sustaining a growth strategy.

Dividend-payout ratio demonstrated a negative relationship with total and systematic risk which suggests that restaurants with high levels of operating risk are likely to distribute a smaller fraction of the company's earnings than those with lower operating risk. The negative relationship between operating returns and two types of risk (systematic and total) implies that firms with superior performance (high ROA) may face a low probability of loss and therefore exhibit low risk. This finding was in line with the Bowman's paradox (1980) which states that higher risk may result in lower returns. According to financial theory, high degree of leverage results in higher financial risk (Ross et al., 2003). However, in Borde's case leverage and risk were unrelated (t-value was not significant). This finding may be attributed to the fact that restaurant firms used in the sample had homogenous levels of financial leverage.

The follow up study of Gu and Kim (2003a) employed 75 restaurant firms in their research sample for the 1996-1999 period. This study found somewhat different results than Borde's (1998) study since only one (liquidity) of the original five variables employed by Borde remained significant at .10 level in Gu and Kim's study. The researchers added asset turnover ratio (AT) as a candidate variable to explain the variation in the firms' betas. That variable had the highest t-value (-4.695) and its negative sign denoted that firms with lower asset turnover are likely to have a higher beta. The final model comprised of liquidity and asset turnover explained 31% of the variation in beta for the restaurant firms.

In another study Kim et al. (2003) looked at determinants of systematic risk of hotel REITs. Their analysis employed 19 publicly traded REITs for the 1993-1999 period. The independent variables in this study were quick ratio (QR), the average total debt-to-assets ratio

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(TD/TA), asset turnover (AT), return on equity (ROE), dividend payout ratio (DIV), total capitalization (CAP), and asset growth (GrTA). Three variables had significant t-values in their paper, namely, TD/TA, CAP, and GrTA. Debt ratio (TD/TA) had a positive sign, which indicated that firms with high debt would have a higher systematic risk. Total capitalization (CAP) had a negative t-statistic sign which implied that smaller hotel REIT firms are likely to have a higher systematic risk. The last significant variable, GrTA had a positive relationship with the firm's systematic risk (beta) which demonstrated that high growth firms can be regarded as more riskier.

Gu and Kim (2003b) followed up on Kim et al.'s (2003) study by utilizing the same sample and examination period to uncover the determinants of unsystematic risk of REIT's. Therefore, the researchers used the same seven variables to assess their impact on REIT's unsystematic risk. The backward regression method retained three variables (significant at .05 level) in the final model. Debt ratio (TD/TA) had a positive sign which indicated that firms with high debt are likely to have a higher unsystematic risk. Total capitalization (CAP) had an inverse relationship with unsystematic risk, which implies that smaller hotel REIT firms are likely to have a higher unsystematic risk. Dividend payout had a positive t value which led authors to believe that high dividend paying firms are subject to higher stock volatility which is in conflict with the findings in the financial management field. Gu and Kim's (2003b) final model accounted for almost 30% of the unsystematic risk of lodging REITs. The main constraint of their and Borde's (1998) studies is the attempt to employ exactly the same variables in an effort to explain both nondiversifiable and diversifiable/total risk.

Roh (2002) examined the relationship between degree of franchising and size (proxied by total assets), growth (3-year growth in percent increase in sales), market-to-book ratio (used as a

proxy for brand name capital), and risk (variance in cash flows) of restaurant firms. Roh

included "state" (states where restaurant firms operate) as a control variable in the regression

equation to ensure that only the direct effect of the variable of interest is being captured in the

coefficient. The author selected 33 publicly traded restaurant companies operating with

franchise agreements. Size had a negative relationship with the propensity to franchise and

growth had a positive significant effect on the degree of franchising. The other significant

variable was risk which was negatively related to degree of franchising. This implies that risk

decreases with the increase in propensity to franchise restaurant units. The regression analysis

demonstrated that 44% of the variation in the degree of franchising (percentage of franchised

units/total units) was explained by the four independent variables.

There is a limited number of studies in the hospitality field that investigated risk both

from the financial and strategic management perspectives. Kim (1992) was the first researcher

who attempted to develop a framework for identification of political environmental issues faced

by multinational hotel chains. Kim selected five Asian countries (Hong Kong, Korea, Malaysia,

Singapore, and Thailand) and used the Delphi Technique to identify the key factors that hotel

chains encounter in the political environment. The study reported four categories of political

issues: law and regulation, administrative, judicial, and lobbying. Based on these findings the

author recommended that the key factors in the political environment identified by this study

should be used as guidelines for strategic planning by the multinational hotel chain management

when developing new projects and/or improving their hotel operations.

Turnbull (1996) investigated the role of the political environment, or more specifically

political risk events and its influence on investment decisions by multinational enterprises

(MNEs) on lodging projects in the Caribbean. Turnbull employed three dependent variables in

her study: the level of equity investment made by a MNE in a specific Caribbean hotel project, denoted in US dollars (INV), the mode of MNE involvement in a hotel project (non-equity, partial equity, and full-equity, participation) (MODE), and risk premium applied to financing of hotel project investment in the Caribbean (RP). Political risk (PR) variable representative of political risk events in Caribbean countries, which has significant influence on MNE investment in Caribbean hotel projects, was employed as an independent variable. The stage of tourism development in a specific Caribbean country (TLC) was used as moderating variable. In her study, Turnbull made three propositions:

P1: Political risk events influence MNE equity investment in the Caribbean hotel project and that the greater risk embodied, the smaller the equity investment the MNE will make in any specific Caribbean hotel project.

P2: Political risk events influence the level of risk premium associated with equity investment in Caribbean hotel projects; the greater the perceived risk, the higher the level of the risk premium associated with the investment; the greater the perceived risk, the higher the level of risk premiums associated with the investment.

P3: The level of equity investment and the associated risk premium in Caribbean hotel projects are influenced by the stage of tourism development in the particular Caribbean country.

The author utilized a Delphi method to find an answer to her propositions. The study used a list of 30 political risk events that were relevant to MNEs decisions. The variables were grouped under four sub-categories: financial risks, operational risks, human resource risks, and indicators of socio-political stability. The financial risk variables contained the bulk of the variables that influence MNEs investment decisions. Human resource category ranked second where variables such as labor relations, and hiring and firing were perceived as having high

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influence on MNE investment decisions. Turnbull finally concluded that all three propositions were supported.

Chathoth (2000) attempted to bridge the gap between two fields by focusing on the relationship between environment risk, corporate strategy, and capital structure in the restaurant industry. The environment risk construct was measured by three variables: economic risk, business risk, and market risk. The economic risk variable was operationalized by calculating the slope of the function with the annualized quarterly GDP growth rate of the U.S. economy as an independent variable and the firm's annualized quarterly sales growth rate as a dependent variable. The business risk measure was obtained by calculating the slope of the function with the average cash flow from operations of firms listed on the S&P 500 as the independent variable and the restaurant firm's cash flow from operations as the dependent variable. The market risk coefficient was computed by regressing the restaurant firm's market price per share over the average market price per share of the S&P 500 firms.

Results indicated that a high variance in firm performance was explained by the co-alignment between environment risk, corporate strategy, and capital structure. Furthermore, the hypothesized relationships between variables that represented the constructs were held intact while accrual and cash flow returns were utilized as surrogates of firm performance. Utilization of cash flows by Chathoth (2002) and Roh (2002) as opposed to traditional accounting measures such as ROA was one of the important innovations in hospitality literature which was in line with Olsen et al.'s (1998) argument that cash flow is the best measure in communicating firm performance to its shareholders.

To date, Chung (2005) is one of the few researchers credited with undertaking a study in determining drivers that influence restaurant cash flows in a time-series setting. Her work is

concerned with what she calls "economic value drivers". Her investigation covered the ten-year period between 1994 and 2003 and includes publicly traded casual-dining restaurants. After filtering more than 100 economic indicators by using the cross correlation function and the Granger causality test, she found 13 economic variables that have co-movements and causality with the operating cash flow per unit (OCFPU).

Chung employed backward stepwise regression which retained four variables: namely, consumer price index for fish/seafood, producer price index for all commodities, employment to population, and producer price index for finished goods less food and energy. The final model explained 66.6% of the variance in the cash flows of the casual-dining restaurants and was significant at .01 level.

Risk Factor Models

Risk models became a critical tool in modern portfolio management and company/industry analysis. They provide estimates used by portfolio managers to measure portfolio risk or supply information to individual firm managers to evaluate industry/firm-specific risk. Perhaps, more importantly, risk models are used to control portfolio risk by identifying the sources of risk through risk decomposition. By the same token, a company executive can decompose the risk of its industry or his/her firm and understand the critical elements of his/her firms' risk profile.

 The ability to identify which factors best capture systematic return covariation is the focal application of multifactor pricing models. Identification of sources of comovement, and hence the source of firm/industry/portfolio risk is an important issue both for practical and theoretical reasons (Chan, Karceski, & Lakonishok, 1998). Theoretically, several researchers

tried to trace a set of underlying pervasive forces and then use these forces as candidates of priced risk (examples include Ross (1976), Sharpe (1977), and Connor (1984)), and thus propose equilibrium characterizations of the cross-section of average returns. On the practical side, factor models were used in the cost of equity estimations (Fama & French, 1997; Rosenberg & Marathe, 1979). However, numerous studies demonstrated that proposed asset-pricing theories provide extremely limited guidance on what risk factors should be considered and what the respective risk premiums of these factors should be. This is well reflected in the works of Black (1993b), Chan and Lakonishok (1993), and Fama and French (1996).

According to Connor (1995), there are three types of factor models: macroeconomic, statistical, and fundamental. Macroeconomic factors are indeed simple and intuitive observable economic variables such as inflation, change in industrial production, excess return on government bonds, and the realized return premium of low-grade corporate bonds relative to high-grade bonds (Chen et al., 1986). APT can be classified in this category since it assumes that random return of each security is assumed to respond linearly to assumed shocks.

In a macroeconomic factor model, the factors are defined by economic theory and observed externally to the security returns data. A security's linear sensitivities to the factors are called the factor betas of the security (Connor, 1995). Berry, Burmeister, and McElroy (1988) postulate that economic variables that are legitimate risk factors must possess three important properties:

(1) At the beginning of every period, the factor must be completely unpredictable to the market.

(2) Each factor must have a pervasive influence on stock returns.

(3) Relevant factors must influence expected return; i.e., they must have non-zero prices.

Fundamental factor models rely on the empirical finding that company attributes such as firm size, dividend yield, book-to-market ratio, and industry classification explain a substantial proportion of common returns. A fundamental factor model uses observed company attributes as factor betas. The factors in a fundamental factor model are the realized returns to a set of mimicking portfolios designed to capture the marginal returns associated with a unit of exposure to each attribute. In this sense, Fama French's three factor model (1993) can be considered a fundamental factor model (although several studies claim that FF factors are a product of market anomalies and data snooping e.g. Black, 1993a). In Connor's (1995) view, fundamental factor models are advantageous over macroeconomic and statistical factors since fundamental factors do not require time-series regression. For example, the dividend yield factor is the realized return per extra unit of dividend yield, holding other attributes constant.

In a statistical factor model, the factors are estimated from the sample returns data by maximizing the fit of the model. Due to their quality of being unlabeled statistical artifacts, statistical factors can be recombined linearly without altering the original model. Conner (1995) states that recombining a set of statistical factors linearly produces an alternative set of statistical factors, equally valid, or a rotation of the original set. An example may serve to illustrate; if factor models are to be true - that is, the macroeconomic factors capture all the pervasive movements in security returns and the statistical factors and the macroeconomic factors both are measured without error. Then, the two factor representations will differ only by a rotation. As a consequence, the statistical factors can be linearly recombined so that they can be identical to the macroeconomic factors.

In 1993, Engerman conducted an analysis which compared a nine-factor fundamental model against a six-factor macroeconomic model over a 13-year period (1980-1992). The

fundamental model included market variability, success (price momentum), size, consumer

cyclicals, industrials, finance, utilities, consumer non-cyclicals, and energy. On the other hand,

the macroeconomic model was composed of interest rates, gold price, inflation rate, BAA bond

spreads, dollar's value, oil price and industrial growth. Engerman reported that the fundamental

factor model outperformed the macroeconomic model by explaining over 36% of the variation in

cross-sectional monthly asset return differences (compared to R^2 of 27.1% by the

macroeconomic model).

In his study, Connor (1995) utilized the three factors (macroeconomic, statistical and

fundamental) to explain common variations in security returns. The statistical and fundamental

factor models substantially outperformed the macroeconomic factor model (the macroeconomic

factors could merely explain 10.9% of the common variation in the stock returns). The

fundamental factor model slightly outperformed the statistical factor model. The author further

reported that the macroeconomic factor model had no marginal explanatory power when added

to the fundamental factor model. This result implies that the risk attributes in the fundamental

factor model capture all the risk characteristics captured by the macroeconomic factor betas. The

author stated that it is not clear how to rotate the fundamental risk attributes to equate some

combination of them to the macroeconomic factor betas. He suggested that future research

might provide insight on how corporate characteristics or industry categories are related to return

sensitivity to various macroeconomic shocks. Compared against each other the statistical factor

model also eliminates all of the explanatory power of the macroeconomic factor model. This

finding seems to be less relevant since the statistical factors have no theoretical grounding.

Connor (1995) stated that if it is supposed that a fundamental factor model correctly

captures the individual assets' sensitivities to the pervasive risks in the economy, and suppose

that a macroeconomic model also correctly captures the pervasive sources of risk, then, the firm-specific attributes used in a fundamental factor model could be combined to produce the factor betas from the macroeconomic factor model. For example, a typical macroeconomic factor is term structure risk (often measured by the realized monthly return on a long-term government bond portfolio minus the short-term government bond return). The sensitivity of a security's return to this factor is the security's term structure beta. Two typical fundamental risk attributes that are frequently encountered in the financial management literature are firm leverage and dividend yield. The author conjectures that each security's dividend yield and firm leverage attributes could be linearly recombined to equal its term structure beta. Connor (1995) contends that this, again, is a type of rotation, because the attributes in the fundamental factor model can be linearly recombined to equal the factor betas in the macroeconomic factor model. Although modern portfolio theory treats these factors as mutually exclusive, Connor (1995) argues that the three types of factor models are not necessarily inconsistent. Conner contends that the three models are simply rotations of one another and can be utilized simultaneously.

Chan et al. (1998) extended the number of risk estimation factors to five by adding two more factors (technical and market factors) to Connor's (1995) three risk factors: Technical factors stem from the belief that past returns help predict future returns (Chan, Jagadeesh, & Lakonishok, 1996; Debondt & Thaler, 1985; Jegadeesh & Titman, 1993). The fifth and final factor, the market factor, is built on the premise of CAPM and return on the market index.

Chan et al.'s (1998) fundamental factors were composed of five variables: book-to-market ratio, cash flow, dividends relative to market equity, earnings relative to market value of equity, and size (market value of common equity). In their findings the dividend factor produced the most interesting pattern by demonstrating that in up markets high dividend yield firms

underperform low dividend firms, whereas, in down markets this picture changed drastically and favored high dividend firms. Researchers attributed this to the conventional wisdom that large (size) stocks, or stocks with high-dividend yields, are "safe" investments in bad times.

Among macroeconomic factors, only default premium and term premium variables contributed to the explanation of return variation. The authors concluded that overall macroeconomic factors do a poor job in explaining return covariation. The researchers went even a step further by contending that widely used factors such as unanticipated inflation and change in industrial production do not seem to be more useful than a randomly generated series of numbers. In terms of technical factors, they concluded that the momentum factor associated with past-six month returns is difficult to interpret. They argued that the reason for operability of the momentum factor might be more profound than the simple fact that similar stocks have similar past returns. At the closure of their study, researchers made a statement that is in congruence with Fama and French's (1993) view that while it is relatively straightforward to document the behavior of mimicking portfolios, the interpretation of the underlying factors is much more difficult and remains a controversial issue.

The Co-alignment Principle

According to Venkatraman and Prescott (1990) "coalignment (also termed consistency, contingency, or fit) is emerging as an important organizing concept in organizational research (Aldrich, 1979; Fry & Smith, 1987; Van de Ven & Drazin, 1985), including strategic management (e.g. Miles and Snow, 1978; Venkatraman & Camillus, 1984). The coalignment principle postulates that the 'fit' between strategy and its context—whether it is the external environment (Anderson & Zeithaml, 1984; Bourgeois 1980; Hambrick, 1988; Hofer, 1975; Hitt,

Ireland & Stadter, 1982; Jauch, Osborn & Glueck, 1980; Prescott, 1986) or organizational characteristics, such as structure (Chandler, 1962; Rumelt, 1974)…has significant positive implications for performance."

Lawrence and Lorsch (1967) maintain that managers' ability to create organizational alignment is a valuable but scarce organizational skill. The authors suggested that such alignment skill might create a rent producing strategic factor within the resource based view of the firm. Powell (1992) proposed that top managers exercise considerable influence on organizational alignment. Powell examined the consequences of organizational alignment in the context of industry, market share, and strategy. He found that some organizational alignments do produce above average profits. He concluded that alignment results from skill and can be considered a strategic resource within the context of the resource-based view of the firm.

The recent developments in the theory of hospitality strategic management are centered around the co-alignment principle, which attempts to provide a comprehensive relationship amongst the key elements of the strategic management process in an organization (Olsen et al., 1998). The co-alignment principle states that, "if the firm is able to identify the opportunities that exist in the forces driving change, invest in competitive methods that take advantage of these opportunities, and allocate resources to those that create the greatest value, the financial results desired by owners and investors have a much better chance of being achieved" (Olsen et al., 1998, p.2). The elements referred in the principle are the forces driving change in the environment in which the firm competes; the strategies in which the firm invests which would ultimately lead to adding economic (shareholder) value to the firm; the business structure that should be compatible with the strategies identified; and finally an evaluation of the performance of the firm (Sharma, 2002).

Firms are required to focus on development of co-alignment with the environment and their strategies. The major constructs of the concept include (1) business environment, (2) strategy choice, (3) organizational structure, (4) and firm performance (Figure 1). These constructs are to be co-aligned in order to maximize the firm value (cash flow per share). The use of co-alignment principle is important to the success of this establishment. The environmental events tend to influence the strategy choices which should in turn influence the firm structure, and finally these should maximize the firm's performance. The environment should be maximized for opportunities and minimized for threats. The strategy should be the best possible choice of the competitive methods used. The firm's structure should include the effective and efficient allocation of resources as well as the successful implementation of the competitive methods previously mentioned. The fourth construct, the firm's performance should in turn produce added value to the establishment in the eyes of the owners, shareholders, managers, employees, and customers.

Figure 1. Co-Alignment Model

The choice of competitive methods used by the firm to take advantage of the threats and opportunities in the business environment. These methods should provide the firm with sustainable competitive advantage.

Environment Events

Major forces driving change in the remote and immediate environments of the organization. These forces, often referred to as trends, create opportunities and pose threats to the firm. They shape and force change in both predictable and unpredictable patterns.

Strategy Choice

Firm Structure

The effective and efficient allocation of the firms' resources to the successful execution of the firms' competitive methods.

Firm Performance

Value added - aggregate value of competitive methods, EPS, Cash flow per share, customer service measures

Source: Olsen et al. (1998).

Olsen et al. (1998) summarize that without co-alignment between structure, strategy, and the environment organizations may find difficulty in achieving long-term success. Defined more simply, decisions will only be successful if implemented into a supportive or suitable structure. Due to the complex dynamics within the market environment, this fit (alignment) is not a one-time event. Hospitality organizations should continually engage in matching their competitive methods and competitive strategies with their organizational structure.

Research on the co-alignment principle is attempting to comprehensively investigate the overall value addition ability of hospitality organizations, given their strategic choice and subsequent resource allocation decisions (Chathoth, 2002). The present study will use this principle in connection to concepts in corporate finance in an effort to uncover

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underlying dimensions of risk and further explore the relationship among the constructs and variables. It is believed that this research endeavor will facilitate restaurant executives' strategy choice process in their pursuit of value creation activities.

Corporate finance theory suggests that a corporation should be concerned about the type of investments it will make in the future, the sources of funds that will be utilized to fund those investments, and the level of cash flows required to operate the company in the short run, which if managed efficiently with minimal risk exposure of the firm will lead to long-term success (Ross et al., 2003). The underlying premise of the above statement is dependent upon four key constructs, outlined above. As the alignment model, these four constructs need to be in alignment, in that there should be a significant relationship between the individual constructs if the firm's overall performance is determined to be above the average firm within a given industry (Sharma, 2002). The present study focuses on understanding the factors that contribute to a deeper understanding of all relevant risk factors. These risk factors ultimately need to be considered in capital investment decisions; thus, they will help firms in deciding what competitive methods the firm should pursue in order to gain a sustainable competitive advantage in the restaurant industry.

Environmental Scanning

Environmental scanning is the first step of the co-alignment and it can be defined as: "Scanning for information about events and relationships in a company's outside environment, the knowledge of which would assist top management in its task of charting the company's future course of action" (Aguilar 1967, p. vii). Scanning the external business environment is a prerequisite for the long-term success of any business enterprise. This is because for the resources of the firm to be properly channeled, management has to have a complete and thorough

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understanding of the activities occurring within its sphere of operations and the link of these operations with the external events (Costa, 1995). Many authors (Fahey & King, 1977; Kefalas & Schoderbeck, 1973; Segev, 1977; and Thomas, 1974; among others) agree that the main functions of environmental scanning are geared toward learning about events and trends in the external environment, establishing relationships between these events, having an understanding of the data, and extracting the main implications for decision making and strategy development.

Prior to entering into the discussion of the environmental scanning it is useful to define some of the dimensions involved in the process of scanning (Fahey & Narayanan, 1986):

- *indicators*: operational measures of environmental analysis;
- *trends*: systematic variation of indicators over time;
- *patterns*: meaningful clusters of trends;
- *segments*: sections of the macro-environment, such as social or political, created conceptually to facilitate analysis;
- *change*: change in indicators, trends or patterns in one or more segments;
- *forces*: the causes underlying changes or factors that cause such changes;
- *issues*: environmental changes considered important in their implications for an organization;
- *projections/forecasts*: future states of trends or patterns;
- *prediction*: projections or forecasts accepted for strategic purposes;
- *analyst*: an individual engaged in environmental analysis.

In the hospitality strategic management literature the importance of environmental scanning was pronounced by several researchers (Geller; 1985; Olsen & DeNoble, 1981; Reid & Olsen, 1981; Slattery & Olsen, 1984; West & Olsen, 1988; 1989; among others). Scanning is

used in gathering useful information that enables corporations to anticipate changes occurring in

the external environment and thus make a decision as to what strategies should the firm

undertake.

Costa (1995) stated that the environmental scanning process can be organized by considering

the following steps:

- specification of company's information needs;

- specification of relevant sources to scan;

- selection of participants in the scanning process;

- definition and assignment of scanning tasks among the participants;

- development of a process for storing and processing information;

- development of a process for disseminating the information.

Costa (1995) argues that in order to develop and implement an environmental scanning

process that is relevant to the organization and has the potential to be successful; it has to be

based on an inside-out perspective by selecting the areas of information need and adequate

sources that should be used to obtain this information. The author further emphasizes that the

company should select active participants who are exposed to relevant information. It is

suggested that it is particularly important that the information should be analyzed and its

significance for the organization be inferred, its storage/dissemination carried out by those

executives that participate in the strategy-making process.

The discussion thus far assumed that executives of hypothetical firms possess skills and

abilities to implement thorough environmental scanning. However, another critical issue in this

process is the availability and quality of the sources of information themselves. Particularly in

cases when executives are faced with tracking, analyzing and interpreting qualitative data, the

quality of data becomes even more critical. In the new millennium, the success of business organizations will be defined by how well they analyze the causal relationships among tangible and intangible and external and internal value drivers in order to undertake viable long-term strategies that will lead to strong financial firm performance.

Competitive Methods

Strategic choice is the second major element of the co-alignment principle. Strategic choice refers to the investment in competitive methods that will ultimately enable the firm to achieve its value-adding intentions in the future (Olsen et al., 1998). Competitive methods are portfolios of products and services that generate cash flows over their economic life. Competitive methods are offered by a respective firm in an effort to create value for the firm and a competitive advantage over its competitors. Choosing a competitive method requires a thorough analysis of the environment and knowledge of concepts of strategy and finance in order to make sure that investment made in each competitive method yields the desired return. Those variables include the future cash flow streams of each investment, the cost of capital used to make the investment, the expected life of the investment, and the risks associated with that investment (Olsen et al., 1998). Just as burdensome is the need to determine the actual investment cost requirements. In each case, management is expected to make estimates pertaining to each variable. In other words, management attempts to predict the future based on its knowledge of the past and the present (Zhao & Olsen, 2003).

Value is most often described as improving the wealth of the owners of the firm through greater returns on invested capital and share price growth. To accomplish this, these executives must make a variety of investments in competitive methods that will add this value in the future.

The first challenge in accomplishing this objective is to determine where the opportunities for investment are and then predict their future cash flow streams. This means executives must estimate the associated changes in revenues, costs, depreciation, working capital, and taxes associated with that investment. Zhao and Olsen (2003) postulate that these estimates may be greatly improved by linking them to the value drivers that have the most impact upon the cash flows. Put differently, executives are attempting to predict future based upon their understanding of the cause and effect relationships between value drivers and cash flows. This leads to the argument that the aggregate value of the discounted cash flow streams of all investments made in competitive methods will then approximate the firm's overall market capitalization.

Estimating the future value of competitive methods is confounded with many potential problems. The most recent concerns about firm valuation as brought out in the financial scandals surrounding firms such as Enron, Tyco, Worldcom and others and the stakeholder lawsuits recently filed against Marriott for inappropriate accounting on vendor rebates point out the challenges all stakeholders have in determining the true value of a firm. Investors, who have relied primarily upon equity analysts, private research firms and others to estimate the future value of firms have reason to believe that these valuations can be flawed. Executives, who have tried to explain value to investors, have been equally challenged to communicate the true value of their firms as they seek to drive up share price. These challenges will grow as new rules are developed by regulators to prevent reoccurrences of the above problems (Zhao & Olsen, 2003).

However, the company must convince investors that these competitive methods actually do produce this value. Failure to provide rational explanations for this value differential will no doubt raise the risk threshold for the investor. Executives seek to avoid this problem for fear of

not being able to attract investors. If they are successful in attracting capital they still may have to pay a risk premium on the cost of capital to compensate investors for this perceived risk.

The present study attempts to investigate the estimation of risk and its underlying dimensions as it is linked to the firms' strategic and capital investment decisions. This is in congruence with Zhao and Olsen's (2003) argument that the more value creation that can be explained through links to value drivers, the less the investor has to be concerned over the fate of the investment. This is especially true, if the behavior of the value driver is known which enables the managers to minimize the variability of their respective firm's cash flows.

Value Drivers

In order to select the most appropriate competitive methods that create competitive advantage for the firm, executives need to develop a thorough understanding of the concept of value drivers. Value drivers are performance variables which have an impact on results of the business such as occupancy rate and customer satisfaction. If value driver is properly defined it may help the managers in three ways:

1) Help understand how value is created and maximized throughout the business,

2) Help prioritize some drivers and decide whether some resources should be allocated to them or removed,

3) Value drivers can align business managers and employees around common goals (Copeland et al., 2000).

Before going into an in-depth discussion, the types and categories of value drivers need to be defined. Zhao and Olsen (2003) state that value drivers are multidimensional. They can be both tangible and intangible as well as being internal and external to the organization. Tangible

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drivers include many econometric variables such as the labor supply of a nation or region, gross domestic product, consumer spending etc. The authors argue that these are fairly straightforward and are tracked by government and the private sector. Because they are quantitative they lend themselves well to efforts to determine cause and effect relationships between their movements and cash flows of the firm.

However, value drivers can be also less tangible. Baruch Lev (2001) is credited with the bulk of the work related to recognizing and managing intangible assets. Assets such as patents, customer lists, human capital, and brand equity become important intangible value drivers in helping a company gain and sustain its competitive advantage over its competitors. Zhao and Olsen (2003) argue that, these value drivers are less tangible and more complex, thus, making it more challenging to analyze with respect to causes and effects.

Internal value drivers are the ones that emerge within the business organization and are directly controlled by the management. Examples of internal value drivers for the restaurant industry would be seat turnover, revenue per customer, return on investment, return on sales etc. The other type of value drivers is external. The examples of external value drivers could be government regulations, safety and security, technology etc. As can be seen, the external value drivers (such as APT factors) are more likely to cause volatility in the firm's cash flows since they can not be directly controlled by the management and may lead to uncertainty in the business environment (since the external value drivers affect the internal ones).

The most recent categorization of value drivers is offered by Abeysekara (2005) as core, complementary and contradictory. The author describes the brand names and distribution channels as the core intellectual capital value drivers for Nestlé Lanka. Abeysekara (2005) argues that brand names allow Nestlé Lanka to distinguish its foods from those of its

competitors, while distribution channels allow consumers to access its products. Customer satisfaction and patents are classified as complementary drivers. While, on the other hand, deterioration in industrial relations can be categorized as a contradictory driver.

In order for a company to achieve its organizational goals, the firms executives' decisions about future strategic direction must be based upon a thorough analysis of the external value drivers and the probable cause and effect relationships they have with the internal value drivers of the firm (Zhao & Olsen, 2003). It must be recognized that these causal relationships may be highly complex and may involve interaction between intangible external and tangible internal value drivers. This will necessitate a deliberate environmental scanning, thorough analysis, and critical thinking by managers if they are to anticipate tomorrow's investment needs.

In their study, Zhao and Olsen (2003) provide an example of the relationship between value drivers related to terrorism. The ability of all hospitality firms to obtain terrorism insurance is nearly impossible in the post September 11 environment. For those small- and medium-sized enterprises of the tourism industry, even if insurance was available, few could afford it. This interaction between terrorism as an external force and internal value drivers such as insurance premiums demonstrates how these causal relationships affect the cash flows of the firm directly. Their example further illustrates how important it is for management not only to anticipate the impact associated with these causal activities but also to develop both long- and short-term strategies to deal with them if the value of the firm is to be protected.

Zhao and Olsen (2003) showed how value drivers in the remote environment can be tracked almost from their inception to accomplish the firm's objectives (See Figure 2). The graphic points out that managers must develop an understanding of the key value drivers related to each category of environment scanned, establish a base of valid and reliable information, and then provide a brief

outlook on what they expect to happen to those value drivers. Authors stated that based upon the quality and strength of this outlook decision makers should be able to improve their estimation processes regarding the future cash flows of value driving competitive methods.

Figure 2. Cause and Effect Relationships of Value Drivers
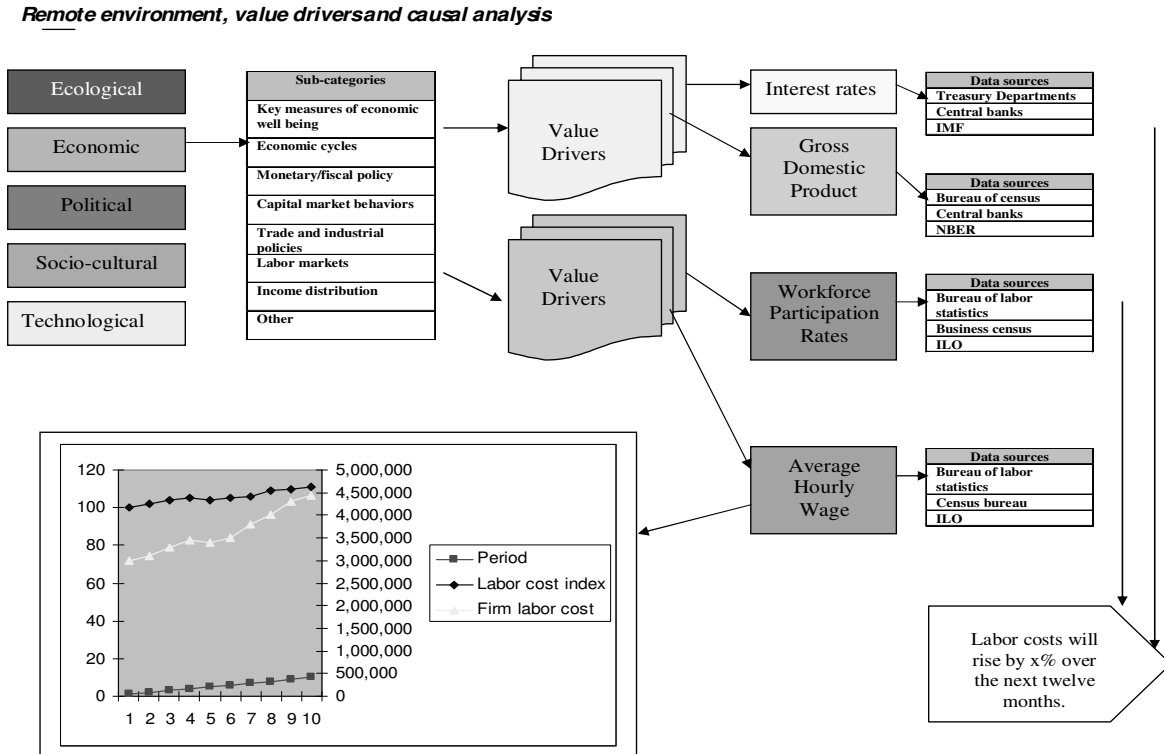
Source: Zhao and Olsen (2003).

Identifying key value drivers is a relatively new stream of strategy research (Kumar et al. 2001). Sweet (2001) states that value drivers link microeconomic paradigms with each macroeconomic paradigm. Zhao and Olsen (2003) suggest that this can be done for the hospitality industry by building upon the foresight of industry participants who have identified the forces that drive change.

Marr, Schiuma and Neely (2004) stated that in order to select its key value driver organizations can use a "matrix of direct dependences." In this matrix the organizational assets are listed in the rows and the performance dimensions, i.e. strategic objectives, are listed in the columns. One can weigh the relative importance of each different asset for the achievement of each performance dimension put forward in the matrix.

In recent years, several researchers (e.g. Ganchev, 2000; Kalafut & Low, 2001; Lapierre, 2000) have attempted to identify intangible value drivers (most of which were internal in nature) and quantify them. In 2000, Lapierre, while analyzing customer-perceived value, identified 13 product, quality, and relationship related value drivers. McBride (2000) pointed out that in the financial world there exist intangible drivers such as innovation, quality, customer care, management skill and alliances that extend beyond tangible drivers such as market capitalization and share price.

Kalafut and Low (2001) built a value creation index that measures intangible value drivers and uses ten variables such as innovation, quality, customer relations, management capabilities, alliances, technology, brand value, employee relations and environmental and community issues. The researchers reported that the employee category was the single greatest value driver that had an impact on the firm's market value. The employee factor had a positive correlation of 0.68 with the firm value. Kalafut and Low (2001) conclude that in the aggregate, quality and the talent of the workforce, quality of labor management relations, and diversity are critically important in the value creation process of the airline companies.

In their exploratory research, of three technology industries -Biotechnology, Information Technology, and Energy and Environment (E&E)- Bose and Oh (2003) identified the following seven value drivers: profitability, uniqueness of innovation, reputation of research team, and

firm, growth prospects, economic factors, and risk. Later in 2004, the same authors ranked these

drivers across the three segments and reported that profitability was ranked first and was

followed by uniqueness of an innovation. Even outsourcing is perceived as a value driver for

sustaining growth and profitability of an enterprise (Hallman, 2002). On the other hand, Ruhl

and Cowen (1990) consider growth rate, operating profit margin, working capital investment,

cost of capital and fixed capital investment as five of the major internal value drivers that can

create shareholder value. Ganchev (2000) reports value drivers of a more tangible nature that

determine a hotel value: growth, REVPAR, market share, room-revenue factor and profit margin.

In a study of 40 Finnish technology firms, Laitininen (2004) found that non-financial variables

accounted for more variation in the three value drivers (namely, risk, growth and profitability)

than the financial variables.

 While these are important to an understanding of value drivers, it must be remembered

that they are primarily internal and do not refer to external value drivers. Whereas, recognizing

the interplay between external and internal valid drivers is critical in assessing where the risk is

coming from and how economic value is created in the hospitality organizations.

Restaurant Industry Value Drivers

Although it is widely agreed that restaurant industry value drivers serve a critical bridge

between the environment and corporate performance, the availability of studies addressing this

issue is almost non-existent. In 2003, Palmer and Hackmey put forward a multivariate predictive

model that consisted of five variables, which consistently explained restaurant sales movements for the

past 10 years (1993-2002). These variables were unemployment rate, prime rate, price inflation of

restaurant meals relative to overall consumer price inflation, the University of Michigan's Index of

Consumer Expectations, and wage and salary disbursements.

In her study, Chung (2005) started with more than 100 macroeconomic variables that she labeled as "economic" value drivers in her study of casual-dining restaurants. She found 13 economic variables that have co-movements and causality with the operating cash flow per unit (OCFPU). These variables were industrial production for meat, consumer price index for fish/seafood, consumer price index for vegetables, producer price index for all commodities, labor force level, employment to population, consumer price index for all items, producer price index for finished goods less food and energy, value of all construction put in place, tax collection, M1 money stock, M2 money stock and personal income. Of these 13 variables the final solution consisted of four variables: namely, consumer price index for fish/seafood, producer price index for all commodities, employment to population, and producer price index for finished goods less food and energy.

In order to expand on Chung's research, i.e. distinguish between macroeconomic and industry variables, the present study looks at the industry body of knowledge to understand what "industry-specific" risk factors are mentioned in the popular press in the recent years. Otherwise, based on Chung's findings one may be left with an impression that products and services related to changes in fish prices, fluctuations in producer prices and employment are the direct causes of cash-flow variance. However, it is not known whether these drivers affect the casual-dining firms directly or they simply reflect changes of the other macroeconomic drivers such as inflation and default spread. The author of this study attempts to identify value drivers that are specific to the foodservice industry instead of using broad-based macro factors such as money supply, exchange rate, and inflation. For this purpose, the author of this study canvassed numerous databases that house restaurant industry magazines and trade journals. The results of that search are described in the next section.

First, the author looked at the cost structure of the U.S. restaurant industry in order to better identify the relevant value drivers. According to NRA (2004), 31% of the industry dollar of full-service restaurants in 2003 went into cost of sales and approximately 30% of every dollar was spent on salaries and wages. While significantly a less influential driver, the occupancy costs comprised 5% of the industry dollar for full-service restaurants.

One of the external value drivers that affects the cash flow variation, and thus the risk of the restaurants, is change in dairy product prices. QSR magazine cites the case of Papa John's International, Inc., which in 2000 initiated a program which allowed the cost of cheese to all Papa John's restaurants to be established on a quarterly basis. This corporation would purchase cheese at the market price and sell it to Papa John's distribution subsidiary, PJ Food Service, at a fixed quarterly price based upon historical average market prices. PJ Food Service will, in turn, sell cheese to Papa John's restaurants at a set quarterly price. Gains or losses incurred by the new corporation due to differences in the actual market price of cheese purchased and the established quarterly sales price will be factored into determining the price for the following quarter. Cheese costs have historically been subject to daily market fluctuations. Particularly, during 1998 and 1999, the block market price has fluctuated from less than $1.20 per pound to more than $1.90 per pound. This volatile market price has served as the basis for restaurants' cheese cost, the largest individual component of food cost in pizza chains (QSR Magazine, 2004).

The importance of dairy prices is further evidenced in the June 2004 survey report by Smith Barney analyst Mark Kalinowski who points to the year's (2004) sharp increase in dairy and cheese prices as being especially worrisome for restaurant operators. Sheridan (2004) adds that beef and poultry prices also have gone up and indicates that the finished-consumer-foods

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category (or wholesale food costs) that is part of the Producer Price Index was up 7.4 percent in May 2004 compared to May 2003.

Another important value driver (both internal and external) is labor cost. The restaurant industry is part of the overall service sector whose product is both intangible and perishable. The nature of the foodservice business pinpoints the importance of the human factor in the company operations. As a result, labor cost emerges as one of the key value drivers that affects industry performance and risk of the restaurant firms (Olsen et al., 1998; Zhao & Olsen, 2003). Chuang & Kleiner (2003) reported that wages may represent between 25% to 35% of the total cost in the fast-food businesses and this figure goes up to 45% in the dine-in sector. These claims apparently demonstrate the vital role of labor cost in the restaurant company's bottomline and its risk profile. In February 2005, Outback Steakhouse cited higher tomato and beef costs as well as the price tag for lobbying against Florida's new minimum wage as reason why fourth-quarter and 2004 annual earnings were lower than comparable periods a year earlier (Anonymous, 2005). This example illustrates how these three value drivers (meat, produce and labor) affect the bottomline of restaurant firms.

Another category of restaurant value drivers is construction costs. Although the majority of restaurant firms grow primarily through franchising, and do not bear the construction cost directly, these firms do mention the probable impacts of factors such as changes in the cost or availability of real estate and construction costs and their relationship with their financial performance in their annual reports

Synthesis of Practical and Theoretical Arguments

The discussion thus far demonstrated that the fields of strategic and financial management were distracted by the issue of which component of risk matters most for investors

and managers. Instead, a more viable option would be to look at risk in a holistic manner (as total risk) and then attempt to understand where the sources of risk come from (i.e. either from the change in macroeconomic indicators or from the industry and/or individual firm characteristics). Then, it will be up to the investors to decide what part of risk should be emphasized in balancing their portfolios. By the same token, managers should decide which of the components of risk will be tracked and estimated in developing their business strategies to make investment and capital budgeting decisions. This is particularly the case when an individual investor may be able to diversify the risk he/she bears by investing in mutual funds that are made up of hundreds of stocks or simply purchasing multiple numbers of stocks and other assets. On the other hand, an individual firm is not able to diversify its risk in the same manner and has to consider the total risk as a risk measurement tool for the organization.

The issue of risk is even more exacerbated by the divergence between the financial and strategic management fields regarding their view of systematic and unsystematic risk in estimating the cost of equity and risk premiums of their capital investment decisions. Madanoglu and Olsen (2003) stated that there is a need to first resolve how one can properly improve the estimates of future cash flow variance which will likely contribute to firm-specific risk and then follow on risk premiums to be added on to the cost of equity that properly reflects that risk. This result can then be aggregated with the estimates of market risk to bring about better overall estimates of firm and project value. The authors maintain this can only be accomplished by understanding how economic forces in the remote business environment affect demand for services and products which in turn affect the revenue streams of hospitality enterprises. Further, they state that this must be followed by a better understanding of the causal relationships which exist between the variables that affect the key value drivers associated with

the cost structure of hospitality enterprises. These variables in combination with each other affect projected cash flow streams and their variance. To date, these relationships have not been studied in the context of this industry, and unsystematic risk remains the barrier to attracting investment capital to this industry. If strategies call for investment in projects or acquisitions in which unsystematic risk is not clear, investors will go elsewhere. Therefore, Madanoglu and Olsen (2003) suggested that research efforts should be directed toward the synthesis of thinking between financial theory and strategy theory in order to improve our understanding of how firms manage risk in order to achieve ideal costs of equity capital in order to improve the valuation of important strategic investments.

As the literature has indicated, there is a severe shortage of studies that focus on a single industry and investigate the factors that affect the total risk of that industry. Both financial and strategic management fields tend to group firms by their Standard Industry Codes (SICs) and try to speculate about differences between the industries. The majority of these studies claim to measure the variation in industry, corporate-parent, and business segment returns (e.g. Rumelt, 1991; Schmalansee, 1985) by decomposing the variance and assuming that each of these effects (i.e. industry, corporate-parent, or business-segment) is considered an independent, random draw of an underlying class of effects. In addition, McGahan and Porter (1997) argued that both Rumelt and Schmalansee reported descriptive but not normative results since they did not provide any guidance about economic and organizational processes underlying their results. The author of the present study believes that it is time for the financial and strategic management fields to inquire what true risk factors are for specific industries rather than reporting broad "across the board" empirical results.

To date, to this author's knowledge, no study in financial and strategic management fields attempted to explore the underlying risk dimensions and their respective variables that capture the industry-specific factors that serve to explain the variance in company cash flows. In other words, none of the studies in strategy and finance enumerates the industry- specific variables that influence the industry stock returns and cash flows. Hence, this study examines this vein of research and enlightens the restaurant industry executives, analysts, and investors as to what are the factors (macroeconomic and industry value drivers) that cause volatility in the restaurant firms' cash flows.

The majority of the studies conducted to date in the hospitality field, which dealt with the concept of risk itself and with the variables that cause it, suffer from the same methodological issue. That is, they attempt to explain risk by using cross-sectional data and simply averaging the accounting data (e.g. quick ratio, net sales) over a certain period (such as 3 or 5 years). The basic premise of cross-sectional design is useful in reporting differences between or among units (e.g. differences between firms on a certain criterion), whereas, time-series design is used to explain why a particular variable has changed over time. Averaging accounting numbers may severely suppress the variation that is due to changes in the business environment due to the business cycles. The available hospitality industry literature has seen studies that mostly explain determinants of risk (e.g. Gu & Kim, 1998; Roh, 2002) by using cross-sectional data. For this reason, future research efforts should be directed toward considering seasonality and business cycles of the restaurant and engaging in building models that are able to explain the temporal nature of the risk concept.

In an effort to overcome the issue discussed above, the present study uses time-series data in order to assess the cause and effect relationships between the remote environment of the

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restaurant industry and the industry-specific (task environment) value drivers. The present study refers to the models developed in the financial management field by scholars (e.g. APT) and practitioners (e.g. BARRA models) and uses these methods to explore the industry risk dimensions of the restaurant industry. It is this author's contention that the convergence of the two fields is the key in providing meaningful empirical models that explain the causal relationships between the external value drivers and internal (firm-specific) value drivers of the restaurant firms.

The present study fills the void in the hospitality literature by putting forward a framework that will serve the needs of restaurant executives. This framework illustrates the interrelationships among macroeconomic value drivers (drivers that affect the universe of stocks) and industry-specific drivers (drivers that influence stocks of a particular industry or group of industries) and their effect on stock returns and firm cash flows. One may argue that both types of drivers (industry and macroeconomic) are exogenous to the restaurant firms; however, it should be noted that macroeconomic value drivers do influence industry drivers, and thus become exogenous to both industry value drivers and restaurant firm cash flows and stock returns. There is a need for a framework that not only captures interrelationships between value drivers and cash flows but also assesses the indirect effect of macroeconomic drivers on cash flows and stock returns through industry value drivers.

Therefore, the researcher makes the following preliminary propositions:

P1: Macroeconomic risk affects the restaurant industry's total risk; the higher the macroeconomic risk, the higher the variation in restaurant portfolio stock returns and cash flows.

P2: Industry risk affects the restaurant industry's total risk; the higher the industry risk, the higher the variation in restaurant portfolio stock returns and cash flows.

These propositions are intended to clarify the picture of the restaurant industry risk by investigating the proposed causal relationships. The ultimate goal of this scholarly attempt is to help industry executives, shareholders, and stakeholders understand the true source of volatility for the restaurant industry and their specific restaurant firms. In other words, this research effort will show how a particular restaurant firm performed on each of these industry value drivers and how these value drivers affected the risk profile of that firm.

CHAPTER 3

METHODOLOGY

This chapter presents the unit of analysis and the operational definitions of the constructs and variables. It also describes what constitutes a good theory and puts forward propositions and hypotheses as a part of an empirical model that is to be analyzed in this study. The chapter also lays out the incremental development of a causal model, its statistical fitness, and issues related to reliability and validity. In the last section of this chapter, the sampling framework, data collection, and data analysis are covered in sufficient detail.

Unit of Analysis

The sample of this study is publicly- traded restaurant firms. The primary unit of analysis in this study is at an industry level because all restaurant firms are taken together to form a single industry portfolio. The dependent variables -variation in operating cash flows and stock returns- are used as a measure of total risk. These two variables are regressed against the variables of the two constructs (macroeconomic risk and industry risk) which are outlined in the next section.

In addition, in order to assess the practical usefulness of the restaurant industry model individual firms are used in the second part of this study. This is done to demonstrate how the internal value drivers of three major restaurant firms (Darden Restaurants, Cheesecake Factory, and Outback Steakhouse) are influenced by the restaurant industry risk model that is being developed in this study.

Theory

Theory is defined as: "A statement of relations among concepts within a set of boundary assumptions and constraints" (Bacharach, 1989, p. 496). Concepts (constructs) are approximated

units, which by their very nature cannot be observed directly (e.g., centralization, satisfaction, or culture) (Bacharach, 1989). On the other hand, observed units mean *variables,* which are operationalized empirically by measurement. The primary goal of a theory is to answer the questions of *how, when,* and *why,* as opposed to the goal of description, which is to answer the question of *what*. A theory may be considered as a system of constructs and variables in which the constructs are related to each other by propositions, and variables are related to each other by hypothesis. The whole system is bounded by the theorist's assumptions.

According to Dubin (1976), theory has a two-fold nature: a) outcome knowledge, in the form of explanation and predictive knowledge; and b) process knowledge, in the form of, for example, increased understanding of how something works. The present study utilizes the outcome knowledge of theory by attempting to explain the variation in restaurant firms' cash flow and stock returns.

The present study strives to adhere to the following criteria of theory proposed by Patterson (1983):

a. Importance- a measure of the importance of a theory is its applicability to more than a limited, restricted situation. Another measure of the importance of a theory is its persistence over time in the research literature.

b. Preciseness and clarity- a theory is clear and precise if it is understandable, internally consistent, and free from ambiguities. These qualities of a theory can be tested by the ease with which a theory can be related to practice, and the degree to which a theory yields hypotheses that can be tested.

c. Parsimony or simplicity- parsimony means that a theory contains a minimum level of complexity, is economically constructed with a limited number of concepts, and contains few assumptions. The present study achieves these by utilizing limited number of constructs.

 d. Comprehensiveness - a theory is comprehensive if it completely covers the area that is modeled by the theory. The theory is considered comprehensive if it accounts for all known data in the field to which it applies. This research study achieves comprehensiveness by employing all available data pertaining to value drivers in the restaurant industry.

e. Operationality- is the extent to which a theory can be reduced to procedures for testing its propositions. Its concepts must be precise enough to be measurable.

f. Empirical validity or verifiability- the degree to which a theory is supported by experience and experiments that confirm its validity.

g. Fruitfulness- the potential of a theory to yield hypotheses or predictions that can be tested.

h. Practicality- a theory is practical if it is useful to researchers and practitioners in organizing their thinking about the phenomenon modeled by the theory.

Boundaries

The notion of boundaries based on assumptions is critical because it sets the limitations in applying the theory. These assumptions include implicit value of the theorist and often explicit restrictions regarding space and time (Bacharach, 1989). Spatial boundaries are conditions restricting the use of the theory to specific units of analysis (e.g., specific types of organizations). Temporal contingencies specify the historical applicability of a theoretical system. Taken together, spatial and temporal boundaries restrict the empirical generalizability of the theory. Although, it is not feasible to study the stock returns going back to the early 1920s within the

context of the restaurant industry, it is viable to state that the proposed theory does not specify any temporal contingencies. In the present study, the proposed theory is only bound in space as it is illustrated in Figure 3:

Figure 3. Spatial Boundaries of the Theory
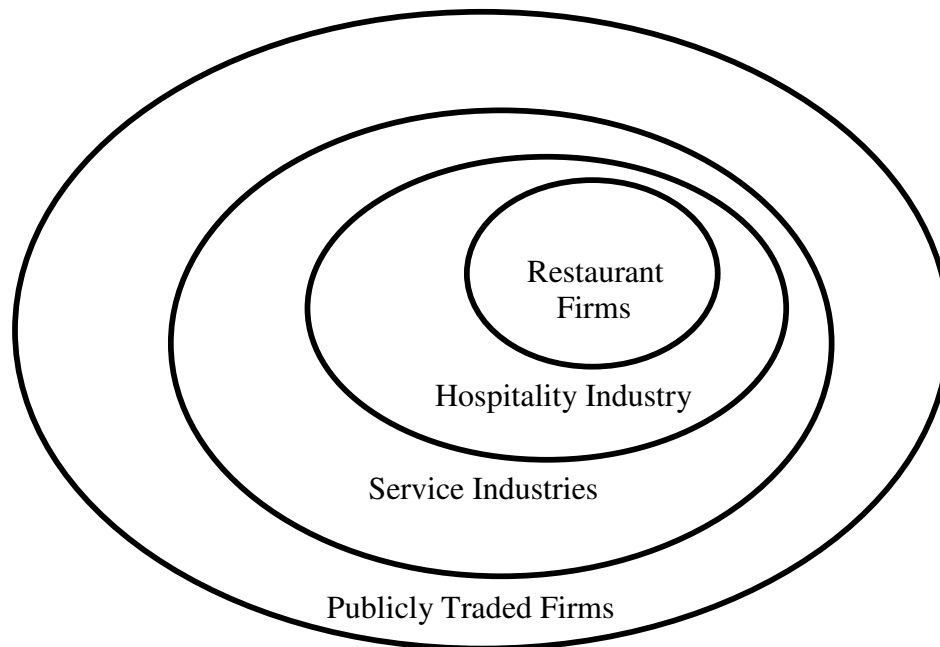
Definition of Constructs and Variables

This section explores the constructs of macroeconomic and industry-specific risk factors and their relationship with the total risk (variance in operating cash flows and standard deviation in stock returns) in more detail. This is achieved by highlighting the various contributions of researchers in the field of business research that have shepherded the development of the theory. The underlying dimensions of these two constructs serve as independent variables in this study.

However, it should also be noted that industry variables might also be dependent variables for the macroeconomic variables. The total risk, the overarching construct in this study, is measured by two variables: variance in operating cash flows and variation of stock returns. These two variables are employed as dependent variables evaluating the causal relationships between risk factors and total risk measures. The present study delves into these constructs from the strategic management and corporate finance perspective as in Chathoth's (2002) study. This is implemented in order to underscore the similarities and differences that might exist across these domains in how these constructs are defined and their underlying dimensions are operationalized.

<div align="center">Macroeconomic Risk</div>

Macroeconomic risk is the variation of security returns caused by market wide factors such as inflation, industrial production etc. The present study utilizes the original five APT factors proposed by Chen et al. (1986): industrial production, expected inflation, unanticipated inflation, term structure, and default risk as variables that encompass the macroeconomic risk construct. As it was discussed in the literature review section, macroeconomic risk can be viewed as external value drivers that are caused by the economic category of the remote environment in which the restaurant firms operate. The management has no control over these drivers as they are totally exogenous and can only be tracked by scanning the firm's remote and task environments. As a result, the management faces challenges in assessing how these drivers affect the industry- and firm-specific value drivers, and thus competitive methods of the restaurant firms.

Macroeconomic (APT) Variables

There is no universal agreement over what are the macroeconomic variables which influence the common variation in the restaurant industry stock returns. Fortunately, Ross's (1976) APT model achieved dominance among other multifactor models that incorporate consumption and macroeconomic factors in their respective models. The model was tested by several researchers in the financial management field (e.g. Berry et al., 1988; Bower, Bower, & Logue, 1986; Chen, 1991) who endorsed the plausibility of this approach.

On the other hand, Chan et al. (1998) and Connor (1995) argued that macroeconomic factors, overall, did a poor job in explaining return covariation (only default premium and term premium variables contributed to the explanation of return variation in Connor's study). However, due to its intuitive appeal and theoretical grounding the present study includes the five APT factors proposed by Chen et al. (1986) in the hypothesized model. Chen et al. built the five factors on the premise that a fundamental pricing model can be written as:

$$P=E(c)/k,$$

where, P denotes price (value), k is the discount rate, E(c) is the expected cash flows. The authors argue that influences on stock prices are driven by term structure, riskless interest, and risk premium (through *k*), and inflation, price-level change, and real production (through *E(c)*). Consequently, they conjectured that investors price five distinct risk factors on the stock market, namely, industrial production (IP), expected inflation (EI), unanticipated inflation (UI), term structure (TS), and default risk (DR). In their seminal study in 1986, the authors reported a positive risk premiums for IP and DR, and negative risk premiums for EI, UI and TS.

Ross (1976) and Chen et al. (1986) claimed that multi-factor models allows one to define the relevant sources of risk (assuming one can identify appropriate measures). In order to

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estimate the effect of these pervasive risk factors, the *shocks* to these risk factors, ($\tilde{I}j, j = 1, 5$),

that is, the percentage change in the risk factor over a period (e.g., one month) should be

properly estimated.

In this study the five APT factors are operationalized in unison with Chen et al.'s (1986)

study, as outlined below:

a) Monthly growth in industrial production (IP):
   $\tilde{I}mp = ln\ (IP(t)) - ln(IP(t - 1))$

b) Short term interest rate which denotes change in expected inflation (EI) ($\tilde{I}DEI$):
   $\tilde{I}DEI = Et\ (It+1) - Et-1(It\ ),$

c) Short term inflation is unexpected inflation (UI):
$\tilde{I}UI = It - Et-1\ (It),$ where It is actual inflation *from t - 1 to t*.

d) Default risk (DR) denoted as UPR:
   $\tilde{I}\ UPR(t)\ = BAA\ return(t) - LTGB\ return(t)$, the difference between returns on a low
grade (BAA) bond portfolio and a high grade (long term government bond (LTGB)) portfolio.

e) Long term inflation denoted as UTS:
   $\tilde{I}\ UTS = LTG\ (t) - TB(t-1)$ is the difference in returns on a long-term riskless portfolio
(LTG) and short-term riskless portfolio (TB).

The main reason why the five APT factors are selected as representative macroeconomic

risk variables in lieu of the hundreds of macroeconomic variables is that the APT factors account

for both changes in cash flows and changes in discount rate itself. The use of the APT factors

ensures that the change in these two key pillars of an investment decision-making process for

any publicly-traded firm: the cash flow and the discount rate can be estimated via utilization of

the APT.

The other justification as to why these five APT factors were selected as representatives

of the macroeconomic risk is showcased in a study undertaken by Berry et al. (1988). These

authors claim that although one can never be sure of whether he/she has the correct set of APT

factors, one should be cognizant that there are many equivalent sets of factors that give rise to similar results. Berry et al. (1988) demonstrate that, intuitively, a set of factors, of "unexpected change in money supply", may very well be substituted by "unexpected change in inflation" and still yield similar results. The researchers stress the fact that the key requirement for an macroeconomic indicator to qualify as an APT risk factor is that is "unpredictable." That is, it should not be predicted, and, thus, it should constitute a "shock" to a portfolio of assets. One example in this case would be the "rate of inflation" vs. "unexpected inflation" variables. Berry et al. (1988) argue that the rate of inflation is not a legitimate factor because it can be predicted based on historical data; whereas, unexpected inflation is a risk factor because it is the difference between expected (predicted) inflation and the actual (realized) inflation.

Based on the arguments made above, the present study embraces the APT factors as state variables that reflect the state of the economy and changes in the remote environment of the restaurant industry. It should be noted that the remote environment domain of the restaurant industry is made up of several other forces such as political, socio-cultural, technological, and ecological categories. However, at this stage, it is not viable to obtain consistent and reliable time-series data that reflect all these dimensions of the remote environment in the restaurant industry. Consequently, the remote environment of the restaurant industry that is analyzed in this study is primarily of economic nature. As the economic factors make up just one of the five categories of the remote business environment and the inability to touch upon other four categories surfaces as one of the primary limitations of the present study.

Industry Risk

Industry risk is defined as change in stock returns and firm profits due to industry effects (Rumelt, 1991). As noted previously, to date, there is no study that directly investigated the

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industry-specific factors that affect the stock returns and cash flows of the publicly traded restaurant firms. The body of knowledge in hospitality management and mainstream business fields, at its present stage, does not provide a clear definition of macroeconomic and industry specific factors. This is clearly demonstrated in Chung's (2005) study where she used the term "economic" value drivers. The only logical point of differentiation between these factors is the fact that macroeconomic factors are those that affect the entire universe of securities (e.g. inflation rate, consumer price index, unemployment rate), whereas the industry-specific factors influence a certain group of securities that belong to the same industry group (e.g. beef price affects retail and restaurant industries). Therefore, based on the underpinnings of portfolio theory, one can not diversify the effects of APT factors by investing in multiple stocks. However, investors are able to diversify the industry-specific risk by investing in securities that are part of other industries. The following example may serve to illustrate this point: A hypothetical investor can avoid the negative effect of Mad Cow disease on his/her portfolio by investing in utilities stocks which are not affected by the fluctuations in beef meat prices.

Identifying industry variables that properly account for the variance in the operating cash flows and stock returns is a challenging issue. In this particular case, the researcher is left with two methods that may solve this problem. The first approach is to thoroughly analyze the risk models developed by companies such as BARRA and attempt to apply these to the restaurant industry itself. The second approach is to identify numerous industry variables that are published by the government and restaurant industry organizations, and filter these variables based on their relevance (face and content validity) and statistical robustness (checks for multicollinearity and construct validity). In an effort to achieve content validity, the author chose the second approach and conducted a thorough analysis of the published industry and

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academic literature that implicitly or explicitly mentions the industry factors or forces that affect the overall risk of the restaurant industry.

This scholarly effort is guided by Porter's (1980) industry structure framework. However, it should be kept in mind that it is not viable to include all the variables of interest into the restaurant industry specific model due to the fact that the industry structure is multidimensional (Porter, 1991). Nevertheless, the present study included as many industry relevant variables as possible in the proposed model.

This effort is based on the premise that these variables affect the supply and demand for the restaurant industry products and services and are either tangible or intangible value drivers as outlined by Zhao and Olsen (2003). Relevant restaurant industry value drivers were drawn from studies of Choi (1999), Chathoth (2002) and Chung (2005) which touched upon business cycles, co-alignment principle, and value drivers in the restaurant industry. A preliminary list of value drivers reported by government agencies (such as Bureau of Labor Statistics), industry equity analyst reports, industry trade magazines and academic journals is reported below:

Industry Value Drivers (Supply)

1. Average hourly earnings of foodservice and drinking place employees

2. Wholesale food price index

3. Construction in-place index

4. Office buildings occupancy rate

5. Restaurant sales growth

6. Restaurant business unit growth

7. Producer price indices (e.g. vegetables, oils, meat, dairy).

8. Producer price index (finished goods)

9.   Beverages price index

10.   Labor laws (e.g. minimum wage, benefits)

11.   Health and insurance premiums

12.   Capital expenditure

13.   Research and development

14.   Menu price growth

15.   Product life cycle

16.   Inventories/sales of food and beverage stores

17.   Retail sales (food services and drinking places)

18.   Industrial production index (meat products, service industry machines)

19.   Technology utilization

20.   Innovations in cooking systems

21.   Average term of franchising contracts

22.   Ability to adjust to changes in consumer preferences

23.   Employee loyalty

24.   Number of special skills needed per transaction

25.   Clarity of service standards

26.   Labor intensity

27.   Capital intensity

28.   Labor productivity index

29.   Energy price index

30.   Customer accusation costs

31.   Training costs

32.   Commercial rent index

33.   Average check per customer

Industry Value Divers (Demand)

1.   Price inflation of menu prices relative to inflation rate

2.   Difference in precipitation rate compared to previous years

3.   Gasoline prices

4.   Dependence on dinner traffic (particularly casual dining chains)

5.   War and terrorism ("CNN effect", travel related effect)

6.   Food borne contamination (e.g. 1993 Jack in the Box)

7.   Repeat patronage percentage

8.   Advertising and promotion -to-sales ratio

9.   Premium menu introductions (e.g. "Atkins friendly").

10.   Personal bankruptcy filings

11.   Consumer price index (meats, fish, poultry, and eggs)

12.   Consumer price index (foods and beverages)

13.   Mad cow disease

14.   Consumer price index (food at home)

15.   Consumer price index (food away from home (menu prices))

16.   Restaurant consumer demographics

17.   Percentage of employed women

Partial list of sources: Conference Board, Global Insight, Bureau of Labor Statistics.

It should be emphasized that this list does not claim to be exhaustive and capture all the underlying variables representing the buyer and supplier dimensions of Porter (1980). Yet, it is the first step taken toward proposing industry-specific value drivers that can be validated via various statistical methods. As noted by Zhao and Olsen (2003), some of these value drivers may be qualitative and may not lend themselves to direct statistical analysis. Therefore, the present study first strives to collect and analyze all relevant data that are available from respected government and commercial sources. The researcher is cognizant that collecting all types of tangible information is an insurmountable challenge because some of the data sources require thousands of dollars for membership and access fees charged by the service providers. In addition, the reputability of some of these data sources may be highly questionable. Yet, every possible measure is taken to compile a comprehensive list of industry value drivers that encompasses all facets of the restaurant industry. As a next logical step, the researcher first focuses on tangible, i.e. measurable value drivers that can be obtained from the sources above. Then, as the information permits, some reference or partial analysis is going to be devoted to qualitative industry value drivers.

The researcher of this study referred to the government and commercial sources and tried to match the restaurant industry value drivers with the macroeconomic and internal value drivers in order to build a solid model. However, it should be remembered that at this stage, there are no studies that can be used as a guide. Although Chung's study (2005) identified four key value drivers that accounted for the variation of operating cash flows in the casual-dining segment, her study did not distinguish between broad-based macroeconomic variables and restaurant industry-specific variables.

The selection of the variables was based on the following three criteria:

1) The variables should be related to the restaurant industry and must either be used by the NRA or covered in the trade magazines and annual company reports.

2) The variables should have at least 10 years of history

3) The variable should be reported on a monthly basis.

Based on the above criteria, a total of 30 relevant variables were identified and were placed in five broad categories: inflation, labor, industrial production, producer prices, and construction (See Tables 2, 3, 4, 5 and 6). These categories are developed based on the present classification conducted by governmental agencies and do not make any reference to dimensionality. In other words, the researcher believes that these five categories of external restaurant industry drivers affect the internal value drivers such as sales, labor cost, food cost, and operating cash flows. In addition, these value drivers are likely to be directly influenced by the original five APT factors. For instance, industrial production index of the APT is expected to have a direct impact on production category of the restaurant industry suppliers. In addition, unexpected inflation factor of the APT is expected to influence the inflation category of the restaurant value drivers. Yet, it is not known whether these categories may be further broken down into their respective sub-categories or whether any other category(ies) of tangible industry value drivers does(do) exist.

Table 2. Potential Industry Value Drivers: Inflation Related

Variable	Code
CPI-U: Food Away From Home	CPIFAH
CPI-U: Meats, Poultry, Fish and Eggs	CPIMPFE
CPI-U: Tomatoes	CPITOM
CPI-U: Fresh Vegetables	CPIFVEG
CPI-U: Cheese	CPICHEES
CPI-U: Fish	CPIFISH

Notes: CPI=Consumer Price Index, CPI-U: Consumer Price Index-Urban.
Source: Bureau of Labor Statistics.

Table 3. Potential Industry Value Drivers: Labor Related

Variable	Code
Average Hourly Earnings for Leisure and Hospitality	AHELH
Average Weekly Hours of Production Workers for Leisure and Hospitality	AWKLH
Average Hourly Earnings of Production Workers in Food Services and Drinking Places	AHEPFSD
Aggregate Weekly Hours for Leisure and Hospitality	AGGWKHL
Aggregate Weekly Payrolls for Leisure and Hospitality	AGWPAYLH
Average Hourly Earnings of Production Workers for Leisure and Hospitality	AHERH
All Employees – Foodservices and drinking places	ALLEMPL

Source: Bureau of Labor Statistics

Table 4. Potential Industry Value Drivers: Production Related

Variable	
IP - Dairy Products	IPDAIRY
IP- Soft Drinks	IPSFTDR
IP – Cheese	IPCHEESE
IP – Butter	IPBUTTER
IP – Beef	IPBEEF
IP – Pork	IPPORK
IP -Miscellaneous Meats	IPMEATS
IP - Poultry Processing	IPOULTRY

Notes: IP = Industrial Production
Source: Federal Reserve Statistics

Table 5. Potential Industry Value Drivers: Producer Prices

Variable	Code
PPI – Cheese	PPCHEESE
PPI - Fluid Milk	PPMILK
PPI - Poultry Processing	PPPLTRY
PPI – Pork	PPORK
PPI – Meats	PPMEAT
PPI - Dairy	PPDAIRY
PPI - Beef	PPBEEF

Notes: PPI = Producer Price Index
Source: Federal Reserve Statistics

Table 6. Potential Industry Value Driver: Construction Related

Variable	Code
Value of Construction Put in Place for Dining/Drinking	CONSDIN

Source: U.S. Census Bureau, Manufacturing and Construction Division

The first step in operationalization of the industry risk construct is to identify relevant industry drivers that belong to the same group. In this case, in statistical terms, the researcher has two options: exploratory vs. confirmatory factor analysis. Exploratory factor analysis (EFA) is useful when no prior theory exists that can serve as a guide to the research under investigation.

Total Risk

Total risk is an overarching construct in this study and is approached from two perspectives: namely, market and accounting. The market measure of total risk is standard deviation of stock returns (often referred to as volatility), and the variation of cash flow is the accounting measure of risk. Chathoth (2002) contends that the variance in stock returns and cash flows are measures that encompass the effects on stakeholders (i.e. bondholders and stockholders) of the firm. Thus, one can maintain that market measure of risk (volatility of stock

prices) directly influences the satisfaction of the firms' shareholders, whereas the variance in cash flow can serve as a barometer for bondholders and lenders satisfaction.

Variation in Operating Cash Flows

The literature review section covered a plethora of views regarding the risk measures employed in strategy and finance. As it was outlined by Ruefli et al. (1999), variance was one of the most commonly used measures of risk. In addition, numerous studies have used Return on Assets (ROA) to assess the change in profitability (McGahan & Porter, 1997; Rumelt, 1991). However, Rappaport (1998) argues that measures such as ROA are affected by the capital structure of a firm. These measures tend to adversely affect certain types of business decisions since they are expressed as a percentage. In addition, equity investment creates biases unless the business analyst distinguishes between the investments of equity in the subsidiary and investments in real assets.

There is a wealth of research undertaken that links earnings and cash flow and their information content to investors (Bowen, Burgstahler, & Daley, 1987; Livnat & Zarowin, 1990; Rayburn, 1986; Wilson, 1986, 1987). Dechow (1994) and Gadad and Thomas (2004) contend that Operating Cash Flow (OCF) is a measure that is much closer to the operating performance of the firm than reported earnings (though more volatile than earnings) and has the advantage of reduced susceptibility to accounting policy manipulation. On the other hand, net income does not account for accruals, and management typically has some discretion over the recognition of accruals (Dechow, 1994). Dechow further points out that this discretion can be used by management to opportunistically manipulate earnings. Thus, earnings become a less reliable measure of firm performance compared to cash flows.

While selecting the most appropriate formula for the OCF, the author wishes to point out that recent accounting scandals resulted in a major overhaul of accounting reporting practices. Therefore, applying a simple cash flow from operations measure may not be appropriate unless a researcher attempts to take into consideration the accruals and other accounting measures that usually confound financial analysis. To measure cash flow from operations the present study used the approach of Sloan (1996) and Fairfield, Whisenant, and Yohnt (2003). In their approach, Operating Cash Flow (OCF) equals Operating Income (OPINC) less Accruals (ACC):

$$OCF_t = OPINC_t - ACC_t$$

In turn, ACC is obtained by subtracting amortization and depreciation expenses (DEPAMORT) from change in working capital (GrWCt):

$GrWC_t = (\Delta AR_t + \Delta INV_t + \Delta OTHERCA_t) - (\Delta AP_t + \Delta OTHERCL_t);$

where,

ΔAR = change in accounts receivable

ΔINV = change in inventories

$\Delta OTHERCA$ = change in other current assets

ΔAP = change in accounts payable

$\Delta OTHERCL$ = change in other current liabilities.

Variation in Stock Returns

The other type of total risk is the market measure of risk that is referred to as volatility. Volatility is measured by the standard deviation of the stock returns and this measure has been used in numerous studies in hospitality research (e.g. Borde, 1998; Kim & Gu, 2003; Roh, 2002) as a measure of total risk.

Generally, historical monthly stock return volatility is estimated by using daily closing prices for stock returns. However, since this study is concerned with the entire restaurant portfolio, the aggregate volatility of the restaurant portfolio has to be estimated by using the monthly historical returns for the previous 3 years for the restaurant portfolio. Given these challenges, the author decided to use excess quarterly value-weighted returns for the restaurant portfolio in order to be in congruence with the OCF measure (which is measured as quarterly change in OCF). Value-weighted excess return is commonly used in the seminal studies in the finance field (Fama & French, 1993; Ferson & Harvey, 1991; Chen et al. 1986; among others).

Model

A model is defined as: "A preliminary work or construction that serves as a plan from which a final product is to be made; a schematic description of a system, theory, or phenomenon that accounts for its known or inferred properties and may be used for further study of its characteristics" (American Heritage Dictionary, 2001, p. 1160). In its spirit, the present model resembles the APT and other multifactor models since it attempts to explain the portfolio behavior based on the proposition that if the returns of a portfolio of assets can be described by a factor structure or model, then the expected return of each asset in the portfolio can be described by a linear combination of the factors.

The resulting factor model is used to create portfolios to estimate the likely response of a portfolio (restaurant industry firms) to economic conditions (See Figure 4). It should be noted that the restaurant industry risk construct is in its nascent stage and is tentatively represented by four hypothetical factors denoted as X1, X2, X3, and X4. These factors are indeed sub-constructs of the industry risk construct as they are most likely represented by more than one

variable. The actual labeling of these factors is undertaken after conducting the EFA. The

author does not make any claim as to how many factors are going to emerge in the final

restaurant industry model and how many variables each industry factor contains.

Figure 4. Proposed Conceptual Model
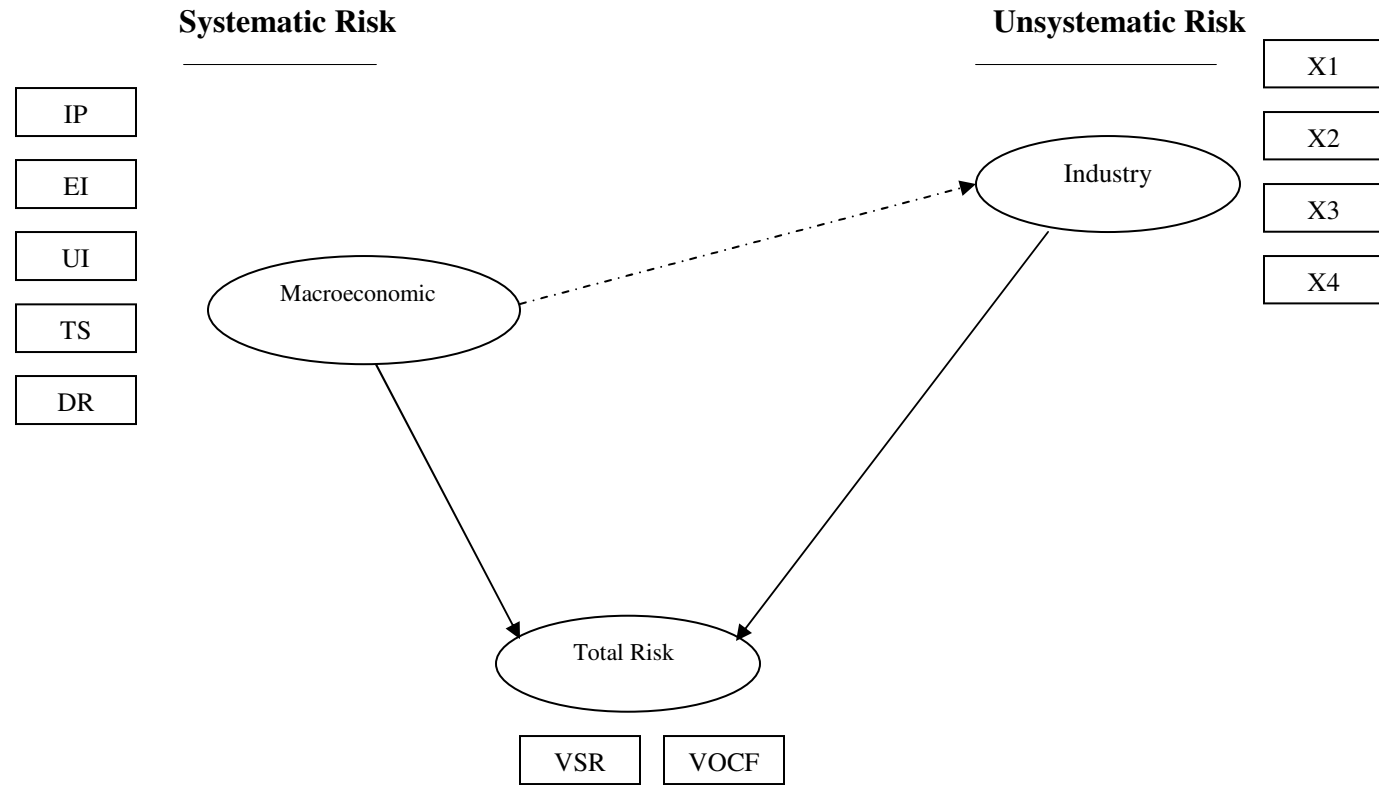
Notes: IP= Industrial Production, EI=Expected Inflation, UI=Unexpected Inflation, TS= Term Structure, DR= Default Risk, X1= Industry Risk Factor1.
X2=Industry Risk Factor2, X3=Industry Risk Factor3, X4=Industry Risk Factor4, VSR=Variation in Stock Returns, VCF= Variation in Operating Cash Flows
The relationship between Macroeconomic Risk and Industry Risk is marked with an interrupted line as the relationship between these two constructs is not exactly known.

Propositions

Based on the discussion thus far the author makes the following propositions:

P1: Macroeconomic risk affects the restaurant industry's total risk; the higher the macroeconomic risk, the higher the variation in restaurant portfolio stock returns and cash flows.

P2: Industry risk affects the restaurant industry's total risk; the higher the industry risk, the higher the variation in restaurant portfolio stock returns and cash flows.

Hypotheses

Before putting forward the relevant hypotheses the author acknowledges that at this juncture the variables capturing the industry value drivers are not known. The hypotheses related to relationships between industry risk variables and variation in stock returns, industry risk variables and variation in cash flows will be postulated after conducting the EFA. Hence, the following preliminary hypotheses are put forward:

Macroeconomic Risk Variables-Variation in Stock Returns Relationship

H1a: There is not a significant positive relationship between changes in industrial production index and restaurant industry's variation in stock returns.

H1b: There is not a significant negative relationship between changes in expected inflation rate and restaurant industry's variation in stock returns.

H1c: There is not a significant negative relationship between unexpected inflation and restaurant industry's variation in stock returns.

H1d: There is not a significant negative relationship between term structure and restaurant industry's variation in stock returns.

H1e: There is not a significant positive relationship between default risk and restaurant industry's variation in stock returns.

Macroeconomic Risk Variables-Variation in Operating Cash Flows Relationship

H2a There is not a significant relationship between changes in industrial production index and variation of operating cash flows of the restaurant portfolio.

H2b: There is not a significant relationship between changes in expected inflation and variation of operating cash flows of the restaurant portfolio.

H2c: There is not a significant relationship between unexpected inflation and variation of operating cash flows of the restaurant portfolio.

H2d: There is not a significant relationship between term structure and variation of operating cash flows of the restaurant portfolio.

H2e: There is not a significant relationship between default risk and variation of operating cash flows of the restaurant portfolio.

The direction of the relationships in the first five hypotheses was established based on Chen et al. (1986). In addition to the relationships posited above, the relationship between industry risk variables and overall restaurant industry risk variables is going to be tested and the number of the hypotheses will be based on the number of emerging industry risk factors (which will be used as observed variables). In the second part of this study, the author will investigate the effect of industry risk variables on the variation in operating cash flows and stock returns after controlling for macroeconomic risk.

Reliability

The reliability of the variables is defined as the square of the correlation between a latent factor (construct) and its indicators. In other words, the reliability indicates the percent of variation in the indicator that is explained by the factor that it is supposed to measure (Long, 1983). The reliability of the quality of the constructs was assessed through various tests. Three types of reliability measures - namely, indicator reliability, composite reliability, and estimated percentage of variance extracted by each construct – are examined. The composite reliability, as calculated with LISREL estimates, is analogous to coefficient alpha and is calculated by the formula provided by Fornell and Larcker (1981):

$$\text{Composite construct reliability} = \frac{(\text{Sum of standardized loadings})^2}{(\text{Sum of standardized loadings})^2 + (\text{Sum of indicator measurement error})}$$

A value higher than .70 is acceptable for a composite reliability – a coefficient alpha showing the internal consistency of the indicators assessing a given factor (Hatcher, 1994). This is followed by a procedure conducted to assess the viability of the constructs by evaluating the extracted variances. Fornell and Larcker (1981) put forward an index called the variance extracted estimate, which assesses the amount of variance that is captured by an underlying factor in relation to the amount of variance due to measurement error.

Unlike other reliability measures, indicator reliability does not have a specific cut-off point denoting the acceptability of an indicator. It is examined to manifest the percentage of variance in the indicator explained by the constructs (Long, 1983). Each factor loading is squared first; these squared factor loadings are then summed. Because a squared factor loading for an indicator is equivalent to that individual variable's reliability, this is equivalent to simply summing the reliabilities for a given factor's indicators. Fornell and Larcker (1981) suggest that it is desirable that constructs exhibit estimates of .50 or larger, because estimates less than .50

indicate that variance due to measurement error is larger than variance captured by the factor itself. The occurrence of higher variance due to error may call into question the validity of the latent construct as well as its representative indicators.

Validity

Validity refers to the approximate truth of propositions, inferences, or conclusions (Trochim, 2001). The key aspect of validity that guides this research is construct validity. It is viewed as the degree of fit between a construct and its indicators and it demonstrates how well the conceptual and operational definition of the measurements and indicators match what they are designed to measure (Newman, 1994; Rosenthal & Rosnow, 1984). Validity deals with the adequacy of a scale and its ability to predict specific events, or its relationship to measures of other constructs (DeVellis, 1991). In other words, construct validity is an assessment of how well a student of the subject translated his/her ideas or theories into actual programs or measures (Trochim, 2001). Trochim views construct validity as a main type of validity that is made of several sub-categories such as face validity, content validity, convergent validity and discriminant validity.

Face validity is assessed by investigating the operationalization of variables and determine whether the indicators seem like a good translation of the construct (Trochim, 2001). He argues that this is probably the weakest way to try to demonstrate construct validity. The content validity is the other sub-category of construct validity. It checks the operationalization of variables against the relevant content domain for the construct. This approach assumes that the researcher has a good detailed description of the content domain which is something difficult to achieve (Trochim, 2001). In order to achieve content validity, the researcher searched all

restaurant industry related published sources to define the relevant variables that measure respective constructs in this study.

The other sub-categories of validity used to disclose the construct are the tests of convergent validity and discriminant validity which collectively make up the construct validity.

Convergent validity demonstrates whether attributes are able to measure the construct that they are supposed to measure and discriminant validity is evidenced when observed indicators that measure one construct are not related to the measures of other constructs in the proposed measurement model (Zikmund, 1997). Generally, correlation coefficient is used to estimate the degree to which any two measures are related to each other. This is done as a researcher looks at the patterns of intercorrelations among the measured variables. Correlations between theoretically similar measures should be "high" while correlations between theoretically dissimilar measures should be "low" (Trochim, 2001). That is, theoretically similar variables should converge on a single construct by virtue of high correlation. On the other hand, theoretically dissimilar measures (i.e. ones that measure different constructs) should have a low correlation.

The test of convergent validity is established when *t* value of each indicator on its underlying construct is significant (Anderson & Gerbing, 1988; Bagozzi & Philips, 1982). On the other hand, a test of discriminant validity is conducted by constraining the correlation parameter between constructs at 1.0 (Venkatraman, 1989). Constraining the correlation between the pairs of constructs to be 1.0 suggests that all the indicators measure the same construct. An observation of significant Chi-square value difference for the unconstrained (identified) and constrained models is supportive of discriminant validity.

Internal and Nominal Value Drivers

Firm-Specific (Internal) Value Drivers

Fortunately, unlike industry value drivers, firm-specific value drivers can be obtained

from the company's financial statements since they are internal to a particular firm. Thus, the

present study utilizes the accounting data reported in the firms' Securities and Exchange

Commission (SEC) filings as a source of firm-specific value drivers.

In order to assess the practical usefulness of the restaurant risk model, the researcher

collected value drivers' data for the three firms mentioned above (Darden Restaurants,

Cheesecake Factory, and Outback Steakhouse). The justification for selecting these three firms

is based on the following criteria: 1) They should compete in the same restaurant segment

(casual-dining) to allow for homogeneity (as in Choi, 1999 and Chung, 2005), 2) They should

either have no franchised units (Darden Restaurants and Cheesecake Factory) or a low ratio (e.g.

25/75) of franchised vs. owned units (Outback). A low franchising ratio allows the model to

build a better relationship between the external and internal value drivers because the operating

data for these firms come from company-owned restaurant units rather than franchised units.

On the other hand, in highly franchised firms it is not feasible to estimate internal value drivers

(such as labor cost) at unit level because franchisor collects franchising royalty and marketing

fees from franchisees, and thus, the franchising firm does not have "real" food and labor costs on

their financial statements. At this stage, three internal value drivers emerge as the most

important measurable drivers in this scholarly attempt: namely, labor cost, food cost (also

referred to as restaurant revenue costs) and operating cash flows. The restaurant industry risk

model is tested on individual firms' value drivers in order to assess the practicality of this

empirical model.

Use of Nominal (Qualitative) Variables

Although it is not feasible to use firm-specific intangible value drivers within the industry portfolio, some macroeconomic or industry-wide events related to the restaurant industry are used as dummy variables in order to assess the effect of these events on restaurant industry. The utilization of qualitative variables enables the researcher to delve into other categories of the remote business environment of the restaurant industry.

Dummy variables are independent variables which take the value of either 0 or 1. In quantitative analysis, a dummy variable is a numeric stand-in for a qualitative fact or a logical proposition (Caravaglia & Sharma, 2000). Commonly used synonyms for dummy variables are design variables (Hosmer & Lemeshow, 1989), Boolean indicators, and proxies (Kennedy, 1981).

In a regression model, a dummy variable with a value of 0 will cause its coefficient to disappear from the equation. Conversely, the value of 1 causes the coefficient to function as a supplemental intercept, because of the identity property of multiplication by 1. This type of specification in a linear regression model is useful to define subsets of observations that have different intercepts and/or slopes without the creation of separate models.

The selection of dummy variables was done as in Chen et al. (2005) who used the presidential elections in Taiwan, the 1999 earthquake, the outbreak of the SARS epidemic, the 2000 Sydney Summer Olympics, the 2002 Japan/Korea World Cup Tournament, the Asian economic crisis of 1997–1998, the Iraqi war in 2003 and the terrorist attacks upon the United States in September, 2001, and called those variables "non-macroeconomic forces". As all nine dummy variables exerted significant negative effect on stock returns, the authors of that study found that the SARS outbreak had the largest effect on hotel stock returns in Taiwan (-25.93%).

This variable was followed by the earthquake in 1999 and the September 11, 2001 terrorist attacks.

The effect of nominal variables to the overall risk of the restaurant industry is assessed by using two dummy variables as in Chen et al. (2005). The first one is related to Mad Cow disease outbreak that was announced in March 1996 by the British Government and the second dummy variable is related to the terrorism events of September 11, 2001 that occurred in the United States. The Mad Cow outbreak is selected because it is directly related with the beef meat supplies which is an important part of the product offerings of the several restaurant companies. In addition, it is the author's belief that the Mad Cow outbreak reflects the impacts not only the supply side but also the demand side of the equation as the outbreak creates some fears among restaurant customers. The same logic applies to September 11 events except that this event affects mostly the demand side as it raises concerns about safety to travel and thus, particularly affects restaurants that are located on major travel routes, airports, and tourist destinations.

Dummy variables were coded as 1 for the quarters affected by the events and 0 for the other observation periods. For stock returns, the length of the event for dummy variable was set as one quarter. On the other hand, for the cash flow analysis, the length of the effect of the dummy variables was extended to two quarters as cash flow is reported on a quarterly basis and is not as dynamic as stock prices are.

Sampling Framework

The sample of this study is developed from the NRN Index published by the Nation's Restaurant News magazine. As of June 2004, the NRN index entailed 81 restaurant firms. The publicly traded restaurant firms in this sample are listed on one of the following stock exchanges: New York Stock Exchange (NYSE), American Stock Exchange (Amex), and National

Association of Securities Dealers Association Quotations (NASDAQ). The researcher has set forth inclusiveness criteria for these company stocks by applying the following rules: 1) The corporation has to generate at least 75% of its revenues from restaurant operations (Barad, 2001; Rumelt, 1991), 2) A minimum of 36 months stock market trading was used as a criterion for a firm to be included in the analysis as suggested by Fama and French (1997), and Annin (1997). Hence, 75 firms that satisfy these criteria were used in this study (See Appendix A).

Data

The initial observation period was set between 1989 and 2004 in an effort to capture sufficient data points for subsequent statistical analysis. However, since tracking and reporting of some of the economic data (such as construction index) by the government agencies began after 1989 (in this particular case in January 1993), the final observation period for the restaurant industry risk model was adjusted to 12 years ranging from 1993 to 2004.

Industry and Macroeconomic Value Drivers

First, monthly data of restaurant value drivers for the 1993-2004 (12 years) is used to assure that there are more than 100 data points available for the model building (N=144). Second, the researcher needed to make a selection between CPI for All Urban Consumers (CPI-U) and CPI for Urban Wage Earners and Clerical Workers (CPI-W). The researcher selected CPI-U because it covers approximately 87 percent of the total population; whereas, CPI-U covers merely 32 percent of the US Population (Bureau of Labor Statistics, 2005).

All the time-series for the 30 industry value drivers are computed by the change/growth (%) as in Chung (2005). In addition, the monthly values of the industry value drivers are transformed into natural logs in order to achieve some stationarity in series (Dufour, Pelletier, &

Renault, 2005). In addition, log transformation may result in improvements if data are skewed and thus, make them more appropriate for multiple time series regression analysis.

The data to estimate five macroeconomic APT variables and the industry value drivers are obtained from Global Insight Database. The APT variables are calculated as in Chen et al. (1986) and (Chen, 1991). Expected inflation is estimated following the method of Fama and Gibbons (1984). All of 30 restaurant industry value drivers employed in this study are seasonally adjusted by the respective agencies that track these indicators. This study utilized Global Insight Database, housed by Wharton Research Data Services, collects industrial and macroeconomic figures from sources such as Board of Governors of the Federal Reserve System, the Conference Board, U.S. Department of Agriculture, Bureau of Economic Analysis, U.S. Department of Commerce, Bureau of the Census, Bureau of Labor Statistics, and U.S. Department of the Treasury.

Internal Value Drivers

The firm-specific value drivers such as labor cost and food cost are obtained from the Quarterly (10-Q) and Annual (10-K) SEC Filings of the respective companies. These figures were normalized (scaled) by the number of owned units in order to control for growth as in Chung (2005). In addition, internal value drivers were adjusted for inflation and seasonality on a quarterly basis.

Stock Returns

The stock return data were obtained from the Center for Research in Security Prices (CRSP) at the University of Chicago. Excess return was calculated as the monthly stock return adjusted for dividends and splits for each restaurant firm less risk free rate (yield of a monthly T-bill). Then monthly excess returns were converted into quarterly excess stock returns. The

reason for using quarterly data is to achieve a consistency with operating cash flows which are reported on a quarterly basis.

In an effort to achieve consistency between the macroeconomic factors and restaurant portfolio stock returns the researcher created a value-weighted restaurant portfolio index by following the "Index Return" formula proposed by CRSP (2003):

$$R(I) = \frac{\sum_i w_i(I) r_i(I)}{\sum_i w_i(I)}$$

An Index Return is the change in value of a portfolio over some holding period. The return on a portfolio *(R(I))* is calculated as the weighted average of the returns for the individual securities in the portfolio: In a value-weighted portfolio, the weight *(wn(I))* assigned to security *n*'s return is its total market value *vn(I)*. CRSP defines the market value of a security *(vn(I))* as the product of its price *(pn(I - 1))* and its number of shares outstanding *(sn(I - 1))*, at the end of the previous trading period.

According to Fama and French (1993), true mimicking portfolios for the common risk factors in returns minimize the variance of firm-specific factors. Using value-weighted components is in the spirit of minimizing variance, since return variances are negatively related to size. Also, using value-weighted components results in mimicking portfolios that capture the different return behaviors of small and big stocks, or high and low BE/ME stocks, in a way that corresponds to realistic investment opportunities.

Another important reason for employing quarterly data (except for estimation of the industry factors where monthly data are utilized) is that annual data may eliminate the cyclical and other detailed aspects of information (Choi, 1999; Sherman, 1991). In addition monthly data may not capture the trends with a very narrowed view (Burns & Mitchell, 1946).

Operating Cash Flows

Operating Cash Flow was calculated as suggested by Sloan (1996) and Fairfield et al. (2003). The data for accounts receivable, inventories, other current assets, accounts payable, current liabilities, depreciation and amortization expense and operating income before depreciation was obtained from the Compustat Database. It should be noted that Compustat does not report operating income after depreciation on a quarterly basis. This is the main reason why the author used operating income before depreciation in estimating quarterly cash flows and it was not necessary to add back the depreciation and amortization back to the equation to obtain operating cash flows.

Quarterly values for the operating cash flow (OCF) for each firm are standardized (scaled) by dividing the cash flow with net sales as in Harford (1999). The major justification why total assets were not used in the scaling procedure is the fact that numerous franchising restaurants do not own the actual restaurant units and thus, a considerable portion of their revenue is derived from intangible assets. The formula for the OCF Index can be written as:

$$\text{OCF to Sales Index} = \frac{(\text{OCF}_t/\text{Sales}_t) \text{ for Firm A}_t + (\text{OCF/Sales}) \text{ for Firm B}_t + \ldots \text{ for Firm Z}_t}{N\,t}$$

where, average OCF of firm A at time t is divided to Sales of Firm A at time t and the same procedure is repeated for the remaining firms of the restaurant portfolio. As a last step, the sum of OCF to Sales for all firms at time t is summed up and divided by the number of firms at time t (Nt) to arrive at the OCF to Sales Index value for the respective quarter.

Data Analysis

Exploratory Factor Analysis (EFA)

Factor analysis is a an interdependence technique that can be used to analyze interrelationships among a large number of variables and to explain these variables in terms of their common underlying dimensions (factors) (Hair, Anderson, Tatham, & Black, 1998). It can be also defined as a statistical approach involving finding a way of condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information. Factors represent the common variance of variables; in this case, the restaurant industry value drivers. The factors are derived based on the factor loadings, which are the correlation coefficients between the variables (rows) and factors (columns) in a matrix. Analogous to Pearson's r, the squared factor loading is the percent of variance in that variable explained by the factor. To obtain the percent of variance in all the variables accounted for by each factor, one needs to add the sum of the squared factor loadings for that factor (column) and divide it by the number of variables.

The eigenvalue for a given factor reflects the amount of variance in all the variables which it explains. A factor's eigenvalue may be computed as the sum of its squared factor loadings for all the variables. A factor's eigenvalue divided by the number of variables (which equals the sum of variances because the variance of a standardized variable equals 1) is the percent of variance in all the variables which it explains. The ratio of eigenvalues is the ratio of explanatory importance of the factors with respect to the variables. If a factor has a low eigenvalue (e.g. lower than 1), then it is contributing little to the explanation of variances in the variables and may be deemed redundant.

This study uses Principal Components Analysis (PCA) which seeks a linear combination of variables such that the maximum variance is extracted from the variables. It then removes this variance and seeks a second linear combination which explains the maximum proportion of the remaining variance, and so on. This procedure is called the principal axis method and results in orthogonal (uncorrelated) factors. The sum of the squared factor loadings for all factors for a given variable (row) is the variance in that variable accounted for by all the factors, which is called the communality. PCA determines the least number of factors which can account for the common variance in a set of variables. This is appropriate for determining the dimensionality of a set of variables such as a set of items in a factor (construct), specifically to test whether one factor can account for the bulk of the common variance in the set, though PCA can also be used to test dimensionality (Hair et al., 1998).

Hair et al. (1998) suggested that one needs at least 100 data points (observations) in order to conduct EFA. In addition, the ratio of data points to variables should be higher than five. In this study, both of these recommendations are expected to be satisfied since there are 144 data points and 30 candidate variables to be included in this analysis (The ratio of data points to number of indicators may exceed five after the author conducts checks for multicollinearity among restaurant industry variables). Hatcher (1994) offers another guideline by suggesting that each of the factors should be represented by at least three variables.

As a first checkpoint, two measures are utilized to assess the feasibility of using EFA. The first measure is called Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO-MSA) which measures whether EFA is appropriate for a correlation matrix by using the idea of a partial correlation. Hair et al. (1998) suggest a minimum value of .60 for this measure. In addition, Bartlett's Test of Sphericity in which the null hypothesis is that the intercorrelation matrix comes

from a population in which the variables are noncollinear (i.e. an identity matrix) is used. The purpose here is to obtain a significant Chi-Square value and reject the null hypothesis.

Hair et al. (1998) view a loading of .40 as "more important" and a loading of .50 as "practically significant." On the other hand, Stevens (2002) states that based on sample size the value of significant factor loading is .512 for a sample size of 100 and a loading of .384 for samples of at least 200 data points. Since the present study uses 144 data points, and simultaneously strives to achieve practical significance, the value necessary for a variable to be included under any of the underlying factors is set at .500. In addition, when a variable loads on more than one factor by having loadings higher than .500 it is excluded from further analysis.

The researcher selected orthogonal rotation in which axes are rotated to preserve orthogonality, which means each factor is unique and uncorrelated with the others. Orthogonality is a restriction placed on the simple-structure search for the clusters of interdependent variables (Rummel, 1970). The total set of factors is rotated as a rigid frame, with each factor immovably fixed to the origin at a right angle (orthogonal) to every other factor. This system of factors is rotated around the origin until the system is maximally aligned with the separate clusters of variables. If all the clusters are uncorrelated with each other, each orthogonal factor is aligned with a distinct cluster. Results involving uncorrelated patterns are easier to communicate, and the loadings can be interpreted as correlations (Rummel, 1970). Moreover, orthogonal factors yield themselves better to subsequent mathematical manipulation and analysis.

This study uses variance maximization (Varimax) rotation as it maximizes the variance of the squared loading of a factor (column) on all the variables (rows) in a factor matrix, which has the effect of differentiating the original variables by the extracted factor. Each factor tends to

have either large or small loadings of any particular variable. A varimax solution yields results which make it simple to identify each variable with a single factor. This is the most common rotation option that is used by the majority of the researchers.

The number of factors is selected based on three criteria: eigenvalues, scree test, and extracted variance. It should be noted that all these are arbitrary criteria and do not have strict cut-off values. The first criterion is called the Kaiser criterion and suggests dropping all components with eigenvalues under 1. The second one is the Cattell's (1952) scree test which plots the components as the X axis and the corresponding eigenvalues as the Y axis. As the scree plot moves to the right, toward higher number of factors, the eigenvalues of the subsequent factors decrease. When the drop in eigenvalues ceases and the curve makes an elbow toward less steep decline, Cattell's scree test guides to stop evaluating all further dimensions that come after the elbow (the point of the steep decline). The third criterion is based on the percentage of variance explained as several authors (Dunteman, 1989; Hair et al., 1998; Stevens, 2002) suggest that underlying factors should account for at least 50% of the extracted variance.

Thus, the researcher put forward the following three criteria to decide on the number of emerging restaurant industry risk factors as suggested by Dunteman (1989):

1)   All selected factors should have an eigenvalue that is higher than 1

2)   Selected number of factors should explain more than 50% of the variance,

3)   The number of factors in the first two steps should be in some congruence with the Catell's (1952) scree plot results (i.e. if the elbow suggests a three-factor solution, the author can select between 2 and 4 factors as a solution).

After grouping variables under their respective factors, the researcher needs to decide on how to use the results of the EFA in subsequent analysis. Since the purpose of this study is to

measure the effect of these dimensions on restaurant industry's overall risk (variation in operating cash flow and stock returns), the author needed to operationalize the emerging factors as observable indicators for time-series multiple regression.

Hair et al. (1998) suggest that three methods that can be utilized to employ the factors in subsequent analyses. The first one is the surrogate variable technique where a "surrogate variable" from each of the latent variables is selected to represent each of the factors. Hair et al. (1998) define "surrogate variable" as the variable that has the highest loading on its respective factor.

The second technique is employed by creating a composite (summated scores) by combining the values of the variables representing their respective factors. Hair et al. (1998) suggest use of summated scores if the factors are "untested and exploratory, with little or no evidence of reliability or validity."

The last method is utilization of factor scores. Factor scores are called *component scores* in PCA, and are the scores of each case (row) on each factor (column) (Garson, 2005). Factor scores are computed by taking each of the case's (observations) standardized score on each variable, multiplying it by the corresponding factor loading of the variable for the given factor, and summing these products. Hair et al. (1998) recommend using factor scores if the scales used to collect the original data are "well-constructed, valid, and reliable" instruments. As this study develops a well-constructed model, the factor scores approach is used in a subsequent analysis.

Cross-Correlation Function

After converting the underlying restaurant dimensions into observable variables, the author needs to investigate whether these variables effect the restaurant industry risk variables contemporaneously or with some time lag by using cross correlation function (CCF). A cross-

correlation is the correlation between two different time series and this correlation is not symmetric (Yaffee, 1998). If x_t leads y_t, then the increases in the cross-correlation function indicating a cross-correlation will point in one direction. If y_t leads x_t the increases in the cross-correlation function will point in the opposite direction. The cross-correlation function is used to identify the direction of relationship between two time series and it is considered a preliminary step for time-series multiple regression.

In this particular case, firm stock returns or cash flows are affected by the macroeconomic or industry variables with some time lag and correlational analysis ignores the lead-lag relationship between variables. To ameliorate this problem several researchers (Brooks, 2002; Cheung & Ng, 2003; Garrett & Hinich, 1999; Kanas, 2004; Koreisha, 1984; among others) used CCF in different situations such as handling autocorrelated residuals.

<center>Multiple Regression Analysis</center>

Multiple regression analysis is used to account for or predict the variance/variation in an interval dependent variable, based on linear combinations of interval, dichotomous, or dummy independent variables) (Cohen & Cohen, 1983; Garson, 2005; Pedhazur, 1997; Tabachnick & Fidell, 2001; among others). Multiple regression establishes that a set of independent variables explains the proportion of the variance in a dependent variable at a significant level (significance test of R^2), and establishes the relative predictive importance of the independent variables (comparing standardized regression coefficients). The multiple regression equation takes the form of

$$y = a + b_1x_1 + b_2x_2 + ... + b_nx_n + e$$

where, b's are the regression coefficients, representing the amount the dependent variable y changes when the independent changes 1 unit, the a is the constant, where the regression line

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intercepts the y axis, representing the amount the dependent y will be when all the independent variables are 0, and e is the error term that indicates the amount of variance that is left unexplained by the independent variables (Garson, 2005; Pedhazur, 1997).

Assumptions

The major assumptions of multiple regression are linearity of relationships, the same level of relationship throughout the range of the independent variable ("homoscedasticity"), presence of non-autocorrelated residuals, interval or near-interval data, no presence of multicollinearity and normal distribution. In addition, regression analysis is particularly sensitive to model specification because failure to include relevant causal variables or inclusion of extraneous variables often substantially affects the variance explained (Pedhazur, 1997).

This study focuses on three of these assumptions: normality, multicollinearity and independence of error terms. The normal distribution assumption of the variables is tested with the Kolmogorov-Smirnov test developed by Kolmogorov (1933) and Smirnov. This test is used to decide if a sample comes from a population with a specific distribution (Chakravarti, Laha, & Roy, 1967)

The multicollinearity assumption is checked before investigating the full model. Only variables which have a Variance Inflation Factor (VIF) values below the threshold value of 10 (Pedhazur, 1997) are to be retained in the analysis. In addition, when the VIF is close to 10 the author is going to examine the condition indices and eliminate variables that have values over 30.

Another critical assumption of time-series regression is that error terms are not autocorrelated. This assumption is tested by using Durbin-Watson (DW) Statistic (Durbin & Watson, 1950, 1951) to detect the autocorrelated errors. The Durbin-Watson test statistic is

designed for detecting errors that follow a first-order autoregressive process. The Durbin-Watson test statistic is calculated from the OLS estimated residuals $\hat{e}_t$ as:

$$d = \sum_{t=2}^{N} (\hat{e}_t - \hat{e}_{t-1})^2 \,/\, \sum_{t=1}^{N} \hat{e}_t^{\,2}$$

The numerator compares the values of error term at times t-1 and t. When a small difference in the numerator results in a relatively small change in the denominator this may denote positive autocorrealation in the errors. On the other hand, there is negative autocorrelation when the error sign changes very frequently and the numerator is relatively large (Brooks, 2002).

The d-statistic has values in the range of 0 and 4. Values of d that are close to 0 are in the region for positive autocorrelation. Values of d that tend towards 4 are in the region for negative autocorrelation. The null hypothesis is stated as "no autocorrelation" among residuals. However, it is not possible to tabulate critical values that can be applied to all regression models as the probability distribution of d depends on the data matrix X. Therefore, a researcher needs to look up the two critical values for d on the table of Savin and White (1977), d-Upper (dU) and d-Lower (dL). Critical values depend on the number of cases in the time series (n) and the number of independent variables in the regression equation (k). The critical values proposed by Savin and White (1977) are at 0.01 level of significance. The decision as to whether autocorrelation in the residuals is significant is made as follows (See Figure 5):

If d < dL or d> 4-dL, reject H0, assume that autocorrelation is a problem

If dL < d < dU or If 4-dU < d < 4-dL, the Durbin-Watson test is inconclusive

If dU < d <4-dU, fail to reject H0, assume that autocorrelation is not a problem

Figure 5. Durbin Watson Statistic Regions

| Reject H0 | Inconclusive | Do not reject H0: No autocorrelation | Inconclusive | Reject H0 |

0   dL   dU   2   4-dU   4-dL   4
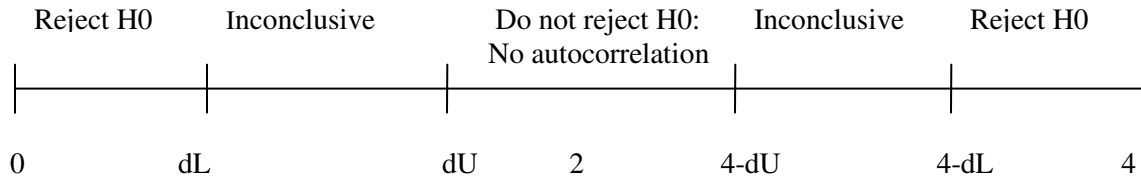
Source: Brooks (2002).

In cases when autocorrelation is detected, the researcher needs to use alternative methods for obtaining robust regression coefficients and standard errors. There are two methods that are widely used in the financial economics field: Cochrane-Orcutt (1949) and Prais-Winsten (1954) methods. In this study, Prais-Winsten is selected over Cochrane-Orcutt due to the following reasons. First, Cochrane-Orcutt drops the first observation and then proceeds to iterate until model converges. Since there are only 48 quarterly data available, Prais-Winsten is chosen as it keeps the first observation and does not iterate (Judge et al., 1985). Second, simulation studies conducted by Spitzer (1979) and Canjets and Watson (1997) demonstrated that Prais–Winsten estimator was superior to the Cochrane–Orcutt estimator in dealing with autocorrelation in regression models. Canjets and Watson (1997) stated that Cochrane–Orcutt estimator is dominated by the other feasible estimators and should not be used. In addition, when the data are highly serially correlated (i.e., the local-to-unity parameter is close to zero), the distribution of the Cochrane–Orcutt estimator has very thick tails, and large outliers are common. Last, the feasible Prais–Winsten estimator is the most robust across the parameters governing persistence and initial variance.

Modeling Approach

After the industry model is put forward, the researcher tests whether a parsimonious

model, that consists of some macroeconomic and industry variables, is able to explain a

comparable portion of variation in OCF of individual restaurant firms in regards to the full model

(that encompasses all variables: industry and economic). This is achieved by using the general-

to-specific approach (also called LSE for London School of Economics) that is created and

further developed by Hendry (1983), Gilbert (1986), and Sargan (1980). This approach dictates

that a good model should be consistent with data and theory and also account for what rival

models are able to explain (Brooks, 2002). Brooks (2002) also points out that the advantages of

LSE approach is that it is statistically sensible and also the theory on which the models are build

does not determine the lag structure of the model.

The LSE approach in this study is conducted by using backward elimination procedure in

time-series multiple regression. This decision was taken after evaluating the other widely cited

methods in the literature such as standard (enter), forward selection, and stepwise selection

(Pedhazur, 1997; Tabachnick & Fidell, 2001). The standard procedure enters all variables in the

model simultaneously just as the first step of backward elimination. However, when the entered

variables are highly correlated the contribution of the individual variables decreases and so does

the adjusted R-squared. The major criticism of forward selection procedure is that once it enters

the variable that has the largest contribution to the model, this variable remains in the following

steps of the model and does not allow the remaining outside variables that are correlated with the

itself to enter the solution. The following example may serve to illustrate: Let us assume that

Industrial Production enters the model first and thus, X1 of the industry variables can not enter

the model due to high correlation with IP. Although stepwise method is a combination of

backward elimination and forward selection procedures it still suffers from the same drawbacks

of forward selection. The stepwise procedure also gives biased regression coefficients that need

shrinkage (the coefficients for remaining variables are too large) (Tibshirani, 1996).

Summary

This chapter defined the constructs and variables that are to be utilized in conducting this

empirical research. It also outlined the potential variables that are hypothesized to capture the

industry risk construct in the restaurant industry. The reliability and validity of the proposed

constructs was discussed and testing procedures were described in sufficient detail.

The formulas that were used in estimating proposed variables were described in this

section. A discussion of what procedures are selected in uncovering the underlying dimensions

and the subsequent analysis of emerging factors via multiple regression was conferred. In

addition, important assumptions and diagnostics of exploratory factor analysis and regression

analysis were laid out.

CHAPTER 4

FINDINGS

This chapter reports the empirical results and the investigation of the relationship

between external value drivers (macroeconomic and industry related) and internal value drivers

(operating cash flow, food cost and labor cost). The section starts with posing and answering

research question 1.

Research Question 1: What are the underlying risk dimensions in the restaurant industry?

In order to answer this research question (RQ) the researcher used exploratory factor

analysis (EFA) to reduce the 30 industry variables into distinct factors i.e. dimensions. Prior to

entering these variables into the EFA, the researcher examined the correlation coefficients

among variables. This measure was undertaken to decide which variables to include in the

analysis. Although some degree of mild multicollinearity is necessary in factor analysis, extreme

correlations (.80 and above) may complicate the analysis (Field, 2000). Garson (2005)

recommends that extremely high intercorrelations may indicate a multicollinearity problem and

collinear terms should be combined or otherwise eliminated prior to conducting factor analysis.

Since this is an exploratory study, the researcher adopted a slightly more liberal approach

in detecting extreme correlations by increasing the threshold to 0.90. This was also due to the

fact that many economic variables may be intercorrelated and eliminating all variables with

intercorrelations above 0.80 may result in a loss of critical and theoretically important variables.

After visual observation of the correlation matrix, the researcher identified two clusters of

variables that had extreme correlations (.90 and above). The first cluster contained five variables

that were related to CPI: Food away from Home (CPIFAH), CPI- Meats, Poultry, Fish and Eggs

(CPIMPFE), CPI - Fresh Vegetables (CPIFVEG), and CPI-Fish (CPIFISH) (See Appendix B). The other group consisted of five highly intercorrelated indicators that were related to employment; namely, Average Hourly Earnings for Leisure and Hospitality (AHELH), Average Hourly Earnings of Production Workers in Food Services and Drinking Places (AHEPFSD), Aggregate Weekly Payrolls for Leisure and Hospitality (AGWPAYLH), Average Hourly Earnings for Production Workers for Leisure and Hospitality (AHEPWLH), and All Employees - Foodservices and Drinking Places (ALLEMPL).

In an effort to ameliorate the severe multicollinearity problem, a composite index for each of the set of variables was created by standardizing the monthly values for each of the variables. These indices were labeled as CPIINDEX and AHEINDEX, respectively. A correlation analysis was conducted in order to assess the probable improvement that was expected to be achieved by this procedure. The correlation matrix showed that these two indices were correlated with each other at a very high level (r=.983, sig. .000). As a result, the researcher had to make a critical decision as to which one of these indices to retain. Since CPI is an important measure of inflation and as two more employment indicators remained in the final analysis, the researcher decided to eliminate AHEINDEX from further investigation. It should be noted that one CPI indicator passed through this diagnostics, as well (CPI-Tomato). However, this variable may not possess the theoretical importance and statistical weight of CPI variables such as CPIMPFE and CPIFISH and thus, can not serve as a substitute to the overall CPI index. Thus, the following 20 variables entered the EFA (Table 7);

Table 7. List of Variables included in the EFA

	Variable	Code
1	IP – Dairy Products	IPDAIRY
2	IP – Soft Drinks	IPSFDR
3	IP – Cheese	IPCHEESE
4	IP – Butter	IPBUTTER
5	IP – Beef	IPBEEF
6	IP – Pork	IPPORK
7	IP – Miscellaneous Meats	IPMEATS
8	IP – Poultry Processing	IPPOULT
9	CPI – Index	CPIINDEX
10	CPI – Tomato	CPITOM
11	PPI – Poultry Processing	PPPOULT
12	PPI – Pork	PPORK
13	PPI – Meats	PPMEAT
14	PPI – Dairy	PPDAIRY
15	PPI – Beef	PPIBEEF
16	PPI – Fluid Milk	PPMILK
17	Aggregate Weekly Hours for Leisure and Hospitality	AGGWKHL
18	Aggregate Weekly Payrolls for Leisure and Hospitality	AGWPAYLH
19	Average Hourly Earnings for Production Workers for Leisure and Hospitality	AHERH
20	Value of Construction Put in Place for Dining/Drinking	CONSDIN

Another important check to ensure the viability of the factor analysis is Bartlett's test of sphericity which indicates whether the correlation matrix is significantly different from an identity matrix (1's on the diagonal, 0's everywhere else). Its calculation is based on a chi-square transformation of the determinant of the correlation matrix. Bartlett's Test value was significant at .01 level (χ^2= 5016.113, df (190), Sig. 000). In addition, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy (MSA) assesses whether the sample of items is adequate. KMO MSA takes a value between 0 and 1 where values close to 1 indicate that sample of items is adequate. A KMO MSA value of .778 was obtained and is considered adequate (since it is above .70) by Hair et al. (1998).

In the next step, the author decided on the number of factors to be extracted. The Kaiser criterion analysis indicated that four factors had eigenvalues over 1 (See Appendix C).

These four factors accounted for over 80% of the extracted variance. Last, the examination of the scree plot showed that there were two elbows: the first one occurred after a two-factor solution and the second elbow was formed after a four-factor solution (See Figure 6). As a result, based on these three criteria: namely, percentage of extracted variance, Kaiser criterion and Catell's screeplot, a three-factor solution was selected as the most rational and optimal one.

Figure 6. Scree Plot Results
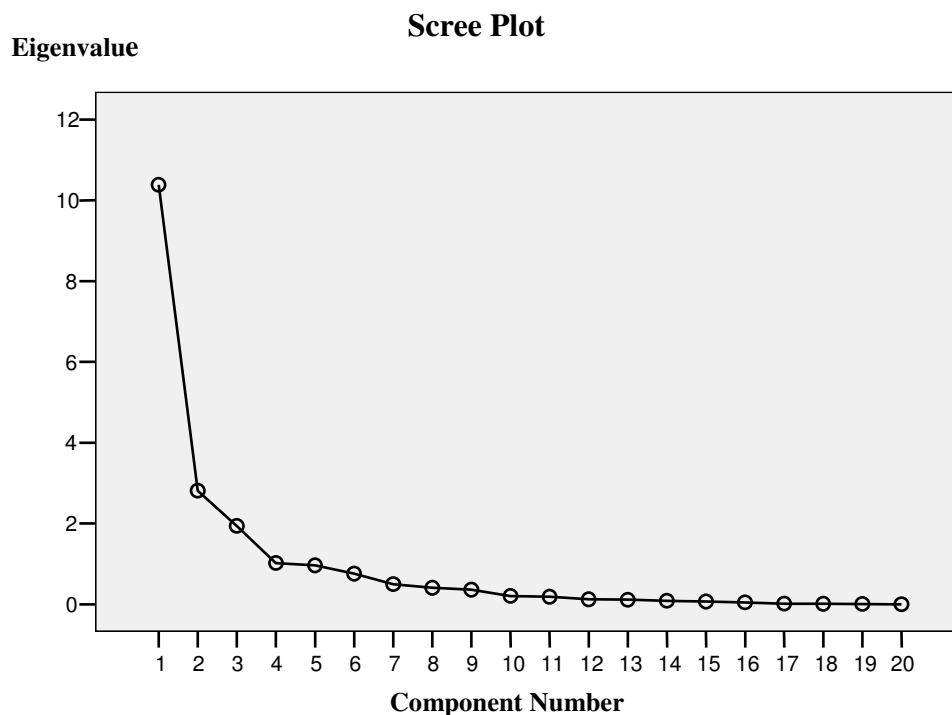
In terms of placing variables under their respective dimensions, the researcher selected the row where the variable had the highest loading value. In addition, variables which loaded significantly on more than one factor (IPSFDR, PPIMILK, PPIDAIRY, PPIBEEF, and IPPOULT) were deleted from the analysis. The deletion was made according to the guidelines of Hair et al. (1998) who state that that for a sample size of 150 the loading coefficient higher

than .50 is considered significant. In addition, CONSTDIN did not load significantly on any of these three factors and was removed from the final solution. After implementing this final step, the remaining variables were grouped as follows (See Table 8):

Table 8. Factor Analysis Results

Factor Name	EV[*]	PV[**]	CV[***]	Variables	Factor Loading
Output	10.385	51.927	51.927		
				1.IPMEATS	.890
				2.CPINDEX	.825
				3.IPPOULT	.815
				4.IPCHEESE	.803
				5.IPPORK	.776
				6.CPITOM	.757
				7.IPBEEF	.739
				8.AGGWKHL	.712
PPI Meats	2.811	14.054	65.981		
				1.PPPLTRY	.856
				2.PPIMEAT	.746
				3.PPIPORK	.679
PPI Restaurants	1.939	9.696	75.677		
				1.IPDAIRY	.845
				2.AWKHL	-.711
				3.IPBUTTER	.663

Notes: * Eigen Value, **Percent of Variance, ***Cumulative Variance

The first factor was labeled as "Output" since it represents multiple aspects of the restaurant industry: labor cost, food cost via CPI, and industrial production. This factor encompassed eight variables, had an eigenvalue of 10.385 and accounted for more than half of the extracted variance (51.927) (See Table 8). IPMEATS was the variable that had the highest loading on this dimension (.890) while AGGWKHL had the lowest loading value (.712).

The second restaurant industry risk dimension was labeled "PPI Meats" as it consisted of three meat-related producer price value drivers. This factor had an eigenvalue of 2.811 and accounted for 14.054% of the explained variance. The loadings of three variables which represented PPI Meats ranged between .856 (PPPLTRY) and .679 (PPIPORK).

The last factor had an unconventional structure as it included two industrial production variables (IPBUTTER and IPDAIRY) and one employment variable (AWKLH). As a result, this restaurant industry latent variable was named "PPI Restaurants". It had an eigenvalue of 1.939 and accounted for approximately 10% of the extracted variance. Here, IPDAIRY had the highest loading (.845) while AWKHL loaded on PPI Restaurants negatively (-.711).

<center>Reliability</center>

In order to assess the viability of this factor structure, the researcher first checked for reliability of the constructs' variables via Lisrel software. The reliability of the industry factors (constructs) were assessed through various tests. Two types of reliability measures - composite reliability, and average variance extracted (AVE) by each construct - were examined. The composite reliability, as calculated with Lisrel estimates, is analogous to coefficient alpha and was calculated by the formula provided by Fornell and Larcker (1981). The composite reliability values for all three factors were above the acceptable threshold level of .70 proposed by Hatcher (1994) while the "Output" factor had the highest construct reliability (0.96) (See Table 9). In terms of extracted variances, all factors had average extracted variances exceeding the 0.50 level.

Unlike the other reliability measures, indicator reliability does not have a specific cut-off point denoting the acceptability of an indicator. It is solely examined to manifest the percentage of variance in the indicator explained by the constructs (Long, 1983). The indicator reliability analysis indicated that IPBEEF had the lowest indicator reliability among all variables (0.19).

On the other hand, another meat related variable (PPMEAT) had the highest indicator reliability (1.01). Joreskog (1999) argues that there is a common misunderstanding that the coefficients in the completely standardized solution must be smaller than 1 in magnitude and he claims that this probably stems from classical exploratory factor analysis where analyzed

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loadings are correlations if a correlation matrix is analyzed and the factors are standardized and uncorrelated (orthogonal). However, since Lisrel treated factors as correlated, the factor loadings indeed became regression coefficients and not correlations. In addition, when a standardized loading is higher it may imply high multicollinearity among variables.

Table 9. Measurement Scale Properties *(N=144)*

Indicator	Completely Standardized Loadings	Indicator Reliability	Error Variance
Output		0.96*	0.71**
IPMEATS	0.97	0.94	0.06
CPIINDEX	0.98	0.96	0.04
IPPOULT	0.99	0.98	0.02
IPCHEESE	0.89	0.79	0.25
IPPORK	0.79	0.62	0.57
CPITOM	0.67	0.82	0.33
IPBEEF	0.44	0.19	0.81
AGGWKHL	0.72	0.52	0.43
PPI Meats		0.84*	0.65**
PPPORK	0.65	0.42	0.57
PPPLTRY	0.54	0.29	0.71
PPMEAT	1.02	1.01	0.02
IP Restaurants		0.72*	0.52**
IPDAIRY	0.93	0.86	0.14
IPBUTTER	0.59	0.35	0.65
AWKLH	-0.59	0.35	0.65

Note: Factors (constructs) are in italics, * Denotes Construct Reliability, ** Denotes Average Variance Extracted

Construct Validity

The construct validity was tested through the tests of convergent validity and discriminant validity. Convergent validity demonstrates whether attributes are able to measure the construct that they are supposed to measure and can be detected from the *t* value of each

indicator (Anderson & Gerbing, 1988; Bagozzi & Philips, 1982). All indicator loadings had significant *t* values (t > 1.96, p < .05) (See Figure 7); hence, convergent validity was established for the industry risk dimensions model.

A test of discriminant validity is conducted by constraining the correlation parameter between the three constructs at 1.0 and then observing the Chi-square difference values for the unconstrained and constrained models. The results showed that the Chi-square value for unconstrained model (χ^2=749.70, df 75) was significantly lower than that of the constrained model (χ^2= 1320.41, df 75) at .01 level which demonstrated that discriminant validity held for the restaurant industry risk model.

Figure 7. Convergent Validity for the Restaurant Industry Model

0.06 → IPMEAT 0.97*
0.04 → CPIINDEX 0.98*
0.33 → CPITOM 0.56*
0.25 → IPCHEESE 0.77*
0.57 → IPPORK 0.79*
0.81 → IPBEEF 0.42*
0.02 → IPPOULT 0.99*
0.43 → AGGWKHL 0.78*

OUTPUT

0.57 → PPPORK 0.42*
0.71 → PPLTRY 0.29*
0.02 → PPMEAT 1.01*

PPI MEATS

0.14 → IPDAIRY 0.86*
0.65 → IPBUTTER 0.35*
0.65 → AWKLH 0.35*
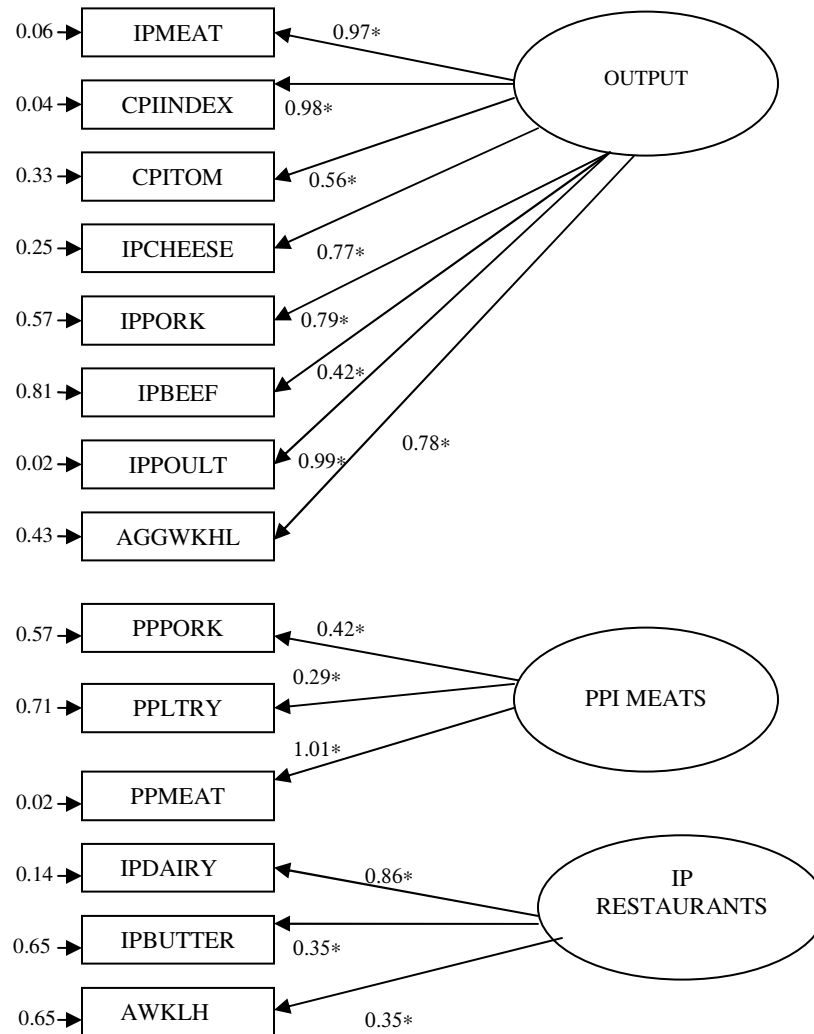
IP RESTAURANTS

*Denotes significance at .05 level

Research Question 2: How do macroeconomic indicators affect the stock returns and operating cash flows in the restaurant industry?

In order to find an answer to the research question above, the researcher investigated the following hypotheses related to the macroeconomic risk variables and restaurant overall risk variables (stock returns and operating cash flows). Prior to establishing the multiple regression equation, the author entered the 14 variables which represented the 3 industry factors in order to

obtain their factor score components. The estimation of factor scores for these three dimensions

allowed for using the factors as restaurant industry variables in time-series regression analysis.

Then, one of the critical assumptions of regression analysis, normal distribution of variables,

was checked via Kolomogorov-Smirnov (K-S) test. Unlike conventional significance tests, non-

normality is detected when K-S Z values are significant at .05 level. The results indicated that

among the 10 variables (5 macroeconomic, 3 industry, and 2 overall risk) based on their K-S Z

values three indicators followed non-normal distribution (namely, IP, TS and Output) (See

Appendix D). However, as IP and TS are two of the five original APT variables and have a

strong theoretical foundation, no further transformations were required. On the other hand, as

the variables making up the three dimensions were already log-transformed prior to factor

analysis and were used as factor scores in regression analysis, no further transformation was

applied, as well.

<center>Macroeconomic Risk Variables - Variation in Stock Returns Relationship</center>

H1a: There is not a significant positive relationship between changes in industrial production

index and restaurant industry's variation in stock returns.

H1b: There is not a significant negative relationship between changes in expected inflation rate

and variation in stock returns of the restaurant industry portfolio.

H1c: There is not a significant negative relationship between unexpected inflation and variation

in stock returns of the restaurant industry portfolio.

H1d: There is not a significant negative relationship between term structure and variation in

stock returns of the restaurant industry portfolio.

H1e: There is not a significant positive relationship between default risk and variation in stock

returns of the restaurant industry portfolio.

The posited relationships are tested by the following regression equation:

Variation in Stock Returns $= a + b_1*IP + b_2*EI + b_3*UI + b_4*TS + b_5*DR + e$

Prior to testing the hypotheses mentioned above, the researcher needed to investigate whether the macroeconomic (independent) variables influence the restaurant industry portfolio stock returns with some time lag. A cross-correlation coefficient was run in order to examine the lead-lag relationships between variables. A maximum of five quarters were used in the cross correlation function in order to account for effects that extend beyond one calendar year. This is a quarter longer than the lag used by Fama (1990) in order to account for difference in different reporting periods due to different fiscal years in the restaurant industry (e.g. some restaurant report their first quarter results in months other March). Results indicate that, generally, there were no lags between restaurant industry stock return and the APT variables (See Table 10). This makes logical sense since the present study uses the quarterly returns and changes in stock prices may occur in a matter of seconds. Therefore, the time-series regression was run contemporaneously for the three variables (IP, DR, and TS). However, the inflation related variables (EI and UI) were related to changes in restaurant portfolio stock returns with some lags (t, -2). Among the five variables only EI was significantly correlated with restaurant industry stock returns at .05 level.

Table 10. Cross-Correlation Functions between Macroeconomic Variables
and Stock Returns

Macroeconomic Variable	Lag (t-)	Correlation (Stock Returns)	SE	Sig.
Industrial Production	0	0.000	0.144	.999
Expected Inflation	2	0.522	0.147	.000
Unanticipated Inflation	2	-0.224	0.147	.147
Term Structure	0	-0.146	0.144	.321
Default Risk	0	-0.162	0.144	.271

Notes: SE = Standard Error

After entering the five macroeconomic variables into the equation, the findings demonstrated that only EI had a significant relationship with the restaurant industry stock returns at .01 level (See Table 11). The sign of the regression coefficient was positive which implies that an increase in expected inflation leads to an increase in stock returns. Therefore, the author rejected the Hypothesis 1b and concluded that there is a significant positive relationship between changes in expected inflation rate and restaurant industry's variation in stock returns. Based on the results obtained from the regression equation all other hypotheses (H1a, H1c, H1d, and H1e, respectively) were not rejected and it was concluded that there is no significant relationship between the variation of the restaurant stock returns and industrial production, default risk, term structure, and unanticipated inflation. The author believes that the reason for not rejecting the remaining hypotheses is that using the variables in dynamic setting (by means of cross-correlation) may increase the intercorrelation among independent variables. Jointly, the macroeconomic risk variables accounted for approximately 40% of the variation in the restaurant stock returns and the F value for this equation was significant at .01 level (See Table 12).

Table 11. Regression Coefficients for Macroeconomic and Dummy Variables (on Stock Returns)

Variable	B	SE	t	VIF
Industrial Production (t,0)	.000	.002	-.063	3.062
Expected Inflation (t,-2)	2.799	.759	3.686***	1.035
Unanticipated Inflation (t, -2)	.382	.213	1.795	1.110
Term Structure (t, 0)	-.029	.022	-1.307	2.492
Default Risk (t, 0)	-.065	.037	-1.774	1.840
Industrial Production (t,0)	-.002	.002	-.835	3.236
Expected Inflation (t,-2)	2.566	.689	3.725***	1.058
Unanticipated Inflation (t, -2)	.276	.194	1.428	1.143
Term Structure (t, 0)	-.044	.021	-2.134**	2.643
Default Risk (t, 0)	-.032	.034	-.928	2.022
September 11	-.265	.080	-3.304***	1.182
Mad Cow	-.006	.076	-.073	1.063

Notes: SE = Standard Error, VIF = Variance Inflation Factor, *** Denotes significance at .01 level,
   ** Denotes significance at .05 level.

Table 12. Model Fit for Macroeconomic Variables and Stock Returns

Model	R^2	Adj. R^2	F Ratio	Sig.
APT	.398	.316	4.885	.002
APT + Dummies	.541	.449	5.895	.000
(R^2 Change)	.143			.009
DW Value	2.347			

In addition to testing the five hypotheses posited above, the author assessed the effect of

nominal (qualitative) variables (after controlling for macroeconomic effects) on the variation of

the stock returns by using two dummy variables: September 11 and Mad Cow. The findings

showed that the effect of Mad Cow disease was not significant at .05 level while the "September

11" dummy had a significant negative relationship with the variation of stock returns of the

industry portfolio. The addition of these dummy variables not only resulted in a significant

improvement of the R-squared value (R^2 change =.143, sig. 009), but also led to the significant t-value of TS.

The assumptions diagnostics showed that none of the variables was collinear as the VIF values were well below the threshold level of 10 suggested by Pedhazur (1997) (See Table 11). In addition, the DW statistic was 2.347 which indicated that the presence of autocorrelation was rejected based on the critical values of Savin and White (1977).

Macroeconomic Risk Variables-Variation in Operating Cash Flows Relationship

This section tests the second set of hypotheses which investigate the relationship between the five macroeconomic risk variables and variation in operating cash flows in the restaurant industry portfolio. Hence, the following hypotheses are posited:

H2a There is not a significant relationship between changes in industrial production index and variation of operating cash flows of the restaurant portfolio.

H2b: There is not a significant relationship between changes in expected inflation and variation of operating cash flows of the restaurant portfolio.

H2c: There is not a significant relationship between unexpected inflation and variation of operating cash flows of the restaurant portfolio.

H2d: There is not a significant relationship between term structure inflation and variation of operating cash flows of the restaurant portfolio.

H2e: There is not a significant relationship between default risk and variation of operating cash flows of the restaurant portfolio.

These hypotheses were tested via the following time-series regression equation:

Variation in OCF to Sales (OCF/S) = $a + b_1 * IP + b_2 * EI + b_3 * UI + b_4 * TS + b_5 * DR$

Since operating cash flows in the restaurant industry are affected by the seasonality, the OCF/S measure was adjusted for seasonality in order to obtain more reliable regression estimates. A seasonal decomposition procedure in the SPSS Trends 13.0 was used to remove any systematic variations due to seasonality effects.

In addition, prior to entering the independent (macroeconomic) variables into the equation, the author checked for lead-lag effects between macroeconomic variables and operating cash flows. While IP, TS, and EI were correlated with Operating Cash Flow/Sales (OCF/S) at 5 lags, UI and TS were related to the changes in OCF/S in the restaurants by 2 and 4 lags respectively (See Table 13). With the exception of the two inflation variables (EI and UI) all other macroeconomic variables were significantly correlated with OCF/S at .01 level.

Table 13. Cross-Correlation Functions between Macroeconomic Variables and OCF/S

Macroeconomic Variable	Lag (t-)	Correlation (OCF/Sales)	SE	Sig.
Industrial Production	5	0.429	0.152	.002
Expected Inflation	5	-0.222	0.151	.153
Unanticipated Inflation	4	0.141	0.146	.362
Term Structure	2	-0.482	0.147	.001
Default Risk	5	0.423	0.152	.003

Notes: SE = Standard Error

As it can be seen on Table 14, none of the hypothesis stated above were rejected, since the t-values of the five macroeconomic variables were below the critical level of 1.96. Although none of the variables had a significant relationship with OCF/S, the coefficient of the determination (R^2) had a significant value of .333 (sig. 01) (Table 15). The adjusted R-squared for this equation was 24.3% which shows that entering all variables into the equation by sacrificing the degrees of freedom reduces the efficiency of R^2 considerably.

Table 14. Regression Coefficients for Macroeconomic and Dummy Variables (on OCF/S)

Macroeconomic Variables	B	SE	t	VIF
Industrial Production (t,-5)	.000	.000	.896	3.282
Expected Inflation (t,-5)	-.207	.205	-1.008	1.055
Unanticipated Inflation (t,-4)	-.064	.050	-1.262	1.167
Term Structure (t,-2)	-.006	.005	-1.133	2.312
Default Risk (t,-5)	.006	.010	.641	2.532
Industrial Production (t,-5)	.000	.000	.951	3.445
Expected Inflation (t,-5)	-.241	.214	-1.124	1.129
Unanticipated Inflation (t,-4)	-.055	.053	-1.052	1.251
Term Structure (t,-2)	-.006	.005	-1.094	2.525
Default Risk (t,-5)	.005	.011	.456	2.818
Sept 11	.005	.008	.699	1.308
Mad Cow	.006	.007	.837	1.098

Notes: SE = Standard Error, VIF = Variance Inflation Factor

In the second step, the addition of the dummy variables to the regression equation resulted in a decrease in the adjusted R-squared which showed that the increase in R^2 itself was achieved by sacrificing the degrees of freedom. The inclusion of the dummy variables did not change the level of significance of the regression coefficients for the macroeconomic variables and the coefficients for the dummy variables were not significant at .05 level, as well. Thus, the author concluded that the qualitative variables did not have an effect on OCF/S after controlling for macroeconomic effects.

Although the five APT variables were extensively researched in the past, the author conducted some of the critical diagnostic checks for regression analysis in order to assess the plausibility of the model. The Durbin-Watson value was very close to 2.00 (DW=2.197) (See Table 15) which indicated that no autocorrelation existed in the analysis. In addition, the VIF values for all the variables were below the critical value of 10 (Pedhazur, 1997) (See Table 14) which showed that multicollinearity was not present in this procedure.

Table 15. Model Fit for Macroeconomic Variables and OCF/S

Model	R^2	Adj. R^2	F Ratio	Sig.
APT	.333	.243	3.694	.008
APT + Dummies	.356	.227	2.764	.021
(R^2 Change)	.003			.933
DW Value	2.197			

Research Question 3: How do restaurant industry risk variables affect the overall risk in the restaurant industry?

The answer to this research question was sought by examining the relationships between industry variables and variation in stock returns and operating cash flows. First, the relationship between restaurant industry value drivers and the variation in restaurant portfolio stock returns was investigated.

Restaurant Industry Risk Variables-Variation in Stock Returns Relationships

This part of the study tests the third research question by looking at the relationship between restaurant industry risk dimensions (used here as indices) and the variation of restaurant stock returns. Hence, the following hypotheses are being tested:

H3a: There is no significant relationship between Output index and restaurant industry's variation in stock returns.

H3b: There is no significant relationship between changes in IP Restaurants index and restaurant industry's variation in stock returns.

H3c: There is no significant relationship between PPI Meats index and restaurant industry's variation in stock returns.

These hypotheses were tested via the following equation:

Variation in Stock Returns $= a + b_1 *$ Output $+ b_2 *$ IP Restaurants $+ b_3 *$ PPI Meats

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In order to be in congruence with the previous analysis concerned with stock return variation, the time-series regression was estimated with cross-correlated (lagged) variables. The cross-correlation analysis indicated that changes in the levels of "Output" index was contemporaneous with changes in the variation of stock returns of the restaurant portfolio (See Table 16). On the other hand, PPI Meats and IP Restaurants were leading the changes in stock returns by 2 and 5 quarterly lags, respectively. None of these cross-correlations was significant at .05 level, however.

Table 16. Cross-Correlation Functions between Industry Variables and Stock Returns

Industry Risk Variable	Lag (t-)	Correlation Stock Returns	SE	Sig.
Output	0	0.114	0.144	.442
PPI Meats	2	0.181	0.147	.170
IP Restaurants	5	0.145	0.152	.332

Notes: SE = Standard Error, VIF = Variance Inflation Factor

The results showed that none of the regression coefficients was significant at .05 level and thus, the researcher could not reject any of the null hypotheses and concluded that there is no relationship between variation in restaurant stock returns and the restaurant industry risk variables (See Table 17). The overall F value for the equation was not significant, as well, which indicates that collectively industry risk variables did not explain a significant portion of the variance in the restaurant portfolio stock returns.

The addition of the "dummy variables" (September 11 and Mad Cow) improved the explained variation in stock returns considerably (from 6.7% to 26.1%). The R-squared change was significant at .05 level which denotes that the inclusion of the nominal variables improved the explained variation. The adjusted R-squared increased from -.005 to .161 which denotes that the increase in explained variance in stock returns was substantial even after accounting for the degrees of freedom.

Table 17. Regression Coefficients for Industry and Dummy Variables (on Stock Returns)

Variables	B	SE	T	VIF
Output (t,0)	.014	.018	.757	1.008
IP Rest (t,-5)	.009	.015	.585	1.081
PPI Meats (t,-2)	.019	.017	1.153	1.074
Output (t,0)	.017	.017	.991	1.109
IP Rest (t,-5)	.008	.014	.610	1.090
PPI Meats(t,-2)	.013	.015	.853	1.094
Sept 11	-.286	.092	-3.101***	1.027
Mad Cow	-.025	.095	-.259	1.097

Notes: SE = Standard Error, VIF = Variance Inflation Factor, *** Denotes significance at .01 level

As the coefficients of the industry variables remained non-significant in this analysis, the "September 11" had a significant negative correlation with stock returns which led the author to conclude that there is a negative relationship between restaurant portfolio stock returns and events of September 11 after controlling for industry effects (See Table 17). On the other hand, the "Mad Cow" dummy remained insignificant at .05 level as in RQ2.

The assumption diagnostics revealed that multicollinearity was not present as all of the VIF values were close to 1. In addition, the DW statistic (d=2.305) was within the region of rejection of null hypothesis that errors are autocorrelated (1.583<d<2.417) (See Table 18).

Table 18. Model Fit for the Industry Variables on Stock Returns

Model	R^2	Adj. R^2	F Ratio	Sig.
Industry	.067	-.005	.935	.521
Industry + Dummies	.261	.161	2.607	.041
(R^2 Change)	.194			.014
DW Value	2.305			

Restaurant Industry Risk Variables-Variation in Operating Cash Flows Relationships

This part of the research question investigates the relationship between restaurant industry risk dimensions (used here as indices formed on factor scores) and the variation in restaurant industry's operating cash flow to sales. The following three hypotheses are tested:

H4a: There is no relationship between Output index and restaurant industry's variation in operating cash flows.

H4b: There is no relationship between changes in IP Restaurants index and restaurant industry's variation in operating cash flows.

H4c: There is no relationship between PPI Meats and restaurant industry's operating variation in operating cash flows.

The following regression equation is established in order to test the hypotheses stated above:

$$\text{Variation in OCF/S} = a + b_1 * \text{Output} + b_2 * \text{IP Restaurants} + b_3 * \text{PPI Meats}$$

In order to properly assess the dynamic relationship between changes in levels of restaurant industry risk variables and changes in OCF/S the author employed CCF. Based on the results shown below (See Table 19), Output led OCF/S by 5 quarters; whereas, IP Restaurants and PPI Meats led OCF/S by 4 quarters. Output had the highest correlation with the dependent variable and was significant at .01 level. PPI Meats was negatively correlated with OCF/S at .10 level of significance.

Table 19. Cross-Correlation Functions between Industry Variables and OCF/S

Industry Risk Variable	Lag (t-)	Correlation (OCF/Sales)	SE	Sig.
Output	4	0.451	0.151	.002
PPI Meats	5	-0.255	0.152	.099
IP Restaurants	5	0.249	0.151	.108

Notes: SE = Standard Error

The regression analysis showed that only the regression coefficient for Output was significant at .05 level which led to the rejection of Hypothesis H4a and led the author to conclude that there is a positive significant relationship between the Output Index variable and variation in the operating cash flows to sales (OCF/S) in the restaurant portfolio. The findings pointed out that the other two hypotheses (H4b and H4c, respectively) could not be rejected as the t-values of their respective regression coefficients were not significant at .05 level. The adjusted R-squared value demonstrated that, overall, the three industry risk variables accounted for 27.1% of the variability in the OCF/S in the restaurant industry portfolio which was significant at .01 level (See Table 21).

Table 20. Regression Coefficients for Industry and Dummy Variables (on OCF/S)

Variables	B	SE	t	VIF
Output (t,-4)	.011	.003	3.570***	1.082
IP Restaurants (t,-5)	.005	.003	1.665	1.073
PPI Meats (t,-5)	-.002	.004	-.466	1.156
Output (t,-4)	.010	.003	3.215***	1.184
IP Restaurants (t,-5)	.004	.003	1.541	1.085
PPI Meats (t,-5)	-.003	.005	-.569	1.322
Sept 11	.006	.007	.830	1.116
Mad Cow	.002	.007	.349	1.074

Notes: SE = Standard Error, VIF = Variance Inflation Factor

The addition of the dummy variables indicated that both "September 11" and "Mad Cow" did not have a significant effect on the OCF/S of the restaurant portfolio (See Table 20). "Output" variable remained significant in the equation while the other two restaurant value drivers were not significant at .05 level in the equation which included dummy variables. The second model (Industry Variables + Dummies) resulted in lower adjusted R^2 than the first model

(Industry Variables only) which indicated that inclusion of the dummy variables did not improve the explanatory power of the model.

Table 21. Model Fit for the Industry Variables (on OCF/S)

Model	R^2	Adj. R^2	F Ratio	Sig.
Industry	.323	.271	6.193	.002
Industry + Dummies	.338	.248	3.770	.007
(R^2 Change)	.015			.664
DW Value	1.946			

The regression diagnostics indicated that the Durbin-Watson statistic was close to 2.00 (1.902) (See Table 21) which implies that first order autocorrelation of error terms is not a concern in both of these models. Furthermore, low VIF values demonstrated that no multicollinearity existed among the independent variables (See Table 20).

Summary of the Posited Relationships

As it can be seen on Table 22, 2 of the 16 relationships were supported as the respective null hypotheses (H1b and H4a) were rejected at .05 level of significance. It should be noted that none of the hypotheses related to macroeconomic variables and operating cash flows, and industry variables and stock returns were rejected at .05 level.

Table 22. Summary of Tested Hypotheses

Ho	Relationship	Decision
H1a	IP → SR	Do no reject
H1b	EI → SR	Reject (sig. .05)
H1c	UI →SR	Do no reject
H1d	TS→SR	Do no reject
H1e	DR→SR	Do no reject
H2a	IP → OCF	Do no reject
H2b	EI →OCF	Do no reject
H2c	UI →OCF	Do no reject
H2d	TS→OCF	Do no reject
H2e	DR→OCF	Do no reject
H3a	Output→SR	Do no reject
H3b	IP Restaurants→SR	Do no reject
H3b	PPI Meats→SR	Do no reject
H4a	Output→OCF	Reject (sig. .05)
H4b	IP Restaurants→OCF	Do no reject
H4c	PPI Meats→OCF	Do no reject

Notes: SR= Stock Returns, OCF= Operating Cash Flows

Figure 8 shows all of the relationships that were investigated in this study. The uninterrupted arrows indicate that 2 of the hypothesized 16 relationships were supported. The first relationship was between EI and Variation in Stock Returns (VSR) and the second relationship was between Output and Variation in OCF (VOCF). Both of these relationships were positive and are marked with "+". The remaining 14 hypotheses are drawn with interrupted lines which denote that the null hypotheses for these relationships were not rejected.

Figure 8. Overview of the Empirical Model
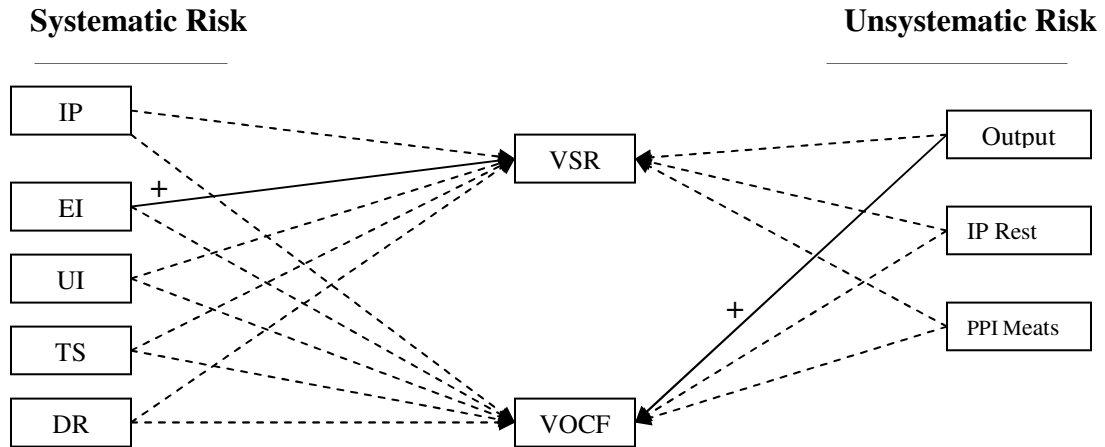
Research Question 4: How do external industry value drivers affect internal value drivers of individual restaurant firms?

Up to this point, the study put forward the relevant restaurant industry dimensions and investigated their influence on overall risk of the restaurant industry portfolio. However, the theorized model and its relationships did not shed any light regarding the practical applicability of this model by the industry practitioners. Thus, RQ 4 attempts to answer the question of how the external value drivers influence the internal value drivers (food cost per unit, labor cost per unit and operating cash flows per unit) of the individual firms.

Restaurant Industry Model vs. Operating Cash Flow per Unit (OCFpU)

First, the industry model is tested over OCFpU for all three restaurant firms. Prior to entering OCFpU in the regression equation, this variable was first adjusted for inflation and then adjusted for seasonality for all companies. In addition, the restaurant industry variables were tested contemporaneously in order to achieve uniformity of the analysis among the three

restaurant firms. In the cases when DW statistic revealed autocorrelated errors, the researcher re-estimated the equation by utilizing Prais-Winsten estimators in the Autoregression procedure. Then, the other two value drivers (food cost and labor cost) were used as dependent variables in the regression equation. "Food cost per unit" (FCpU) and "Labor cost per unit" (LCpU) were first adjusted for inflation on a quarterly basis and then adjusted for seasonality via seasonal decomposition procedure.

This step of the investigation regressed the industry model over the Operating Cash Flow per Unit (OCFpU) for the three firms. The results indicated that the industry model explained over 25% of the variation in OCFpU for Cheesecake Factory and more than two-third of the variation in OCFpU for Darden Restaurants (See Table 23). The DW values for both equations were within the confidence region and thus, autocorrelation was not present in the analysis.

Table 23. Fit for the Industry Model on OCFpU

Model	R^2	Adj. R^2	Sig.	DW
IND (Darden)	.679	.654	.000	2.372
IND (Cheesecake)	.258	.207	.004	2.451
IND (Outback)	.816	.814	.000	1.146
IND (Outback) *(Re-estimated)*	.664	.633	.000	1.862

Notes: IND= Industry Model, DW= Durbin-Watson Statistic

As for Outback Steakhouse, the industry model produced a very high R-squared value (81.6%); however, these findings were not interpretable as DW statistic indicated that critical value of "d" was in the inconclusive region. Yet, in order to make the comparison of these results meaningful the author decided to apply a corrective autoregression procedure to produce unbiased results. The autoregression procedure showed that coefficient of determination remained considerably high for Outback Steakhouse (R^2=.633). The findings demonstrated that

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the industry model explained a significant portion of the variation in the firms' OCFpU at .01

level of significance.

The examination of the regression coefficients showed that all three restaurant

industry model variables had a significant positive relationship with the variation of OCFpU (See

Table 24). The level of significance was at .01 level for Darden Restaurants and Outback

Steakhouse and was at .05 level for Cheesecake Factory.

Table 24. Regression Coefficients for Industry Variables (on OCFpU)

	B	SE	t
Darden			
Output	68.980	8.843	7.801***
IP Restaurants	25.196	7.057	3.570***
PPI Meats	23.445	7.126	3.290***
Cheesecake			
Output	.050	.020	2.525**
IP Restaurants	.042	.020	2.146**
PPI Meats	.045	.020	2.241**
Outback			
Output	4.732	0.431	10.973***
IP Restaurants	2.673	0.429	6.227***
PPI Meats	2.910	0.440	6.608***
Outback (Re-estimated)			
Output	4.846	0.608	7.970***
IP Restaurants	2.446	0.553	4.417***
PPI Meats	2.629	0.565	4.646***

Notes: SE = Standard Error, *** Denotes significance at .01 level,
 ** Denotes significance at .05 level.

Restaurant Industry Model vs. Labor Cost per Unit (LCpU)

The next item under investigation was Labor Cost per Unit (LCpU). The industry model

managed to explain over half of the variation in LCpU for Outback Steakhouse and Cheesecake

Factory (See Table 25). The coefficient of determination for Darden Restaurants was over 90%

but since the DW statistic was within the region of rejecting the null hypothesis (0.746), the results of Darden were not appropriate for further interpretation.

Table 25. Fit for the Industry Model on LCpU

Model	R^2	Adj. R^2	Sig.	DW
IND (Darden)	.929	.923	.000	0.746
IND (Darden) (*Re-estimated*)	.323	.255	.002	2.187
IND (Cheesecake)	.670	.647	.000	2.394
IND (Outback)	.555	.525	.000	1.407

Notes: IND= Industry Model, DW= Durbin-Watson Statistic

To amend the problem of autocorrelated error terms, an autoregression procedure was employed. The Prais-Winsten method revealed that autocorrelation led to an overestimation of the R-squared value as it decreased from .929 to .323. The findings showed that the industry model accounted for a significant fraction of the variation in the LCpU for all three firms at .01 level.

The analysis at a variable level indicated that all of the external value drivers had a significant positive relationship with the variation of LCpU. All of the t values of the industry model variables for all three companies were significant at .01 level (except PPI Meats for Outback's LCpU which was significant at .05 level) (See Table 26).

Table 26. Regression Coefficients for Industry variables (on LCpU)

Variable	B	SE	t
Darden			
Output	39.499	3.994	9.890***
IP Restaurants	20.828	3.187	6.535***
PPI Meats	15.577	3.218	4.840***
Darden (Re-estimated)			
Output	18.511	5.286	3.502***
IP Restaurants	10.391	2.999	3.465***
PPI Meats	13.143	3.177	4.137***
Cheesecake			
Output	89.553	10.689	8.378***
IP Restaurants	30.472	10.638	2.864***
PPI Meats	39.662	10.914	3.634***
Outback			
Output	16.900	2.639	6.403***
IP Restaurants	7.785	2.626	2.964***
PPI Meats	6.987	2.695	2.593**

Notes: SE = Standard Error, *** Denotes significance at .01 level, ** Denotes
significance at .05 level.

Restaurant Industry Model vs. Food Cost per Unit (FCpU)

The last part of the firm analysis focused on the relationship between restaurant industry

variables and food cost per unit (FCpU) for the three casual-dining companies. The industry

model accounted for over 40% of the variation in FCpU for Cheesecake Factory (See Table 27).

On the other hand, the estimates of the other two companies were shadowed by the first-order

autocorrelation of error terms. Hence, an autoregression procedure was applied to correct the

problem. The findings revealed that severity of autocorrelation was higher for Outback

Steakhouse where the coefficient of determination decreased from .677 to .320. In the case of

Darden Restaurants, the R-squared value decreased from 80.4% to 59.5%. It should be noted

that all these values (original and re-estimated) were significant at .01 level for all three

companies.

Table 27. Fit for the Industry Model (on FCpU)

Model	R^2	Adj. R^2	Sig.	DW
IND (Darden)	.804	.789	.000	1.178
IND (Darden - *Re-estimated)*	.595	.557	.000	1.802
IND (Cheesecake)	.440	.402	.000	1.718
IND (Outback)	.677	.655	.000	.513
IND (Outback - *Re-estimated)*	.320	.256	.000	1.775

Notes: IND= Industry Model, DW= Durbin-Watson Statistic

The analysis at a variable level indicated that all of the external value drivers

(except IP Restaurants for Cheesecake) had significant positive relationship with the

variation of FCpU (See Table 28). All of the t values of the industry model variables for

all three companies' FCpU were significant at .01 level (except PPI Meats for Darden

which was significant at .05 level and IP Restaurants for Cheesecake was not significant).

Table 28. Regression Coefficients for Industry Variables (on FCpU)

Variable	B	SE	t
Darden			
Output	39.499	3.994	9.890***
IP Restaurants	20.828	3.187	6.535***
PPI Meats	15.577	3.218	4.840***
Darden (Re-estimated)			
Output	34.628	5.643	6.136***
IP Restaurants	18.172	4.214	4.312***
PPI Meats	16.937	4.279	3.957***
Cheesecake			
Output	52.903	10.354	5.109***
IP Restaurants	11.044	10.304	1.072
PPI Meats	30.336	10.572	2.869***
Outback			
Output	21.493	2.631	8.170***
IP Restaurants	8.670	2.618	3.312***
PPI Meats	11.215	2.686	4.175***
Outback (Re-estimated)			
Output	13.763	3.959	3.476***
IP Restaurants	7.600	3.023	2.514**
PPI Meats	11.945	3.120	3.829***

Notes: SE = Standard Error, *** Denotes significance at .01 level, ** Denotes significance at .05 level.

Research Question 5: Do external industry value drivers explain the variation in the internal value driver (operating cash flows) after controlling for macroeconomic variables?

The final research question in this study answered the question whether industry model variables remain in the final parsimonious model when entered into an equation with the five macroeconomic variables. For this purpose, the author used backward regression procedure which started with a full model that included all 8 variables (5 macroeconomic and 3 industry).

Backward elimination regression was used by Chung (2005) and Oxelheim (2003) in arriving at the best model of macroeconomic variables which explained corporate performance and by Gu and Kim (2003b) in exploring the determinants of unsystematic risk of REITs.

The analysis related to RQ5 demonstrated that in all three cases (Darden, Cheesecake, and Outback) the industry variables (Output, PPI Meats, and IP Restaurants) remained in the final "parsimonious" model". While the parsimonious model for Darden and Cheesecake resulted in a three-variable solution (all three restaurant industry value drivers), in the case of Outback Steakhouse, the final model consisted of four variables (three industry variables and unanticipated inflation) (See Table 29). As Darden and Cheesecake' analysis retained only the three industry variables the regression coefficients were exactly the same as on Table 23 (Therefore, they are not reported separately on Table 29). On the other hand, all four regression coefficients for Outback were significant at .01 level and were positively related to the OCFpU.

Table 29. Regression Coefficients for the Parsimonious Model

	B	SE	t
Outback			
UI	19.614	6.910	2.839***
Output	4.59	0.404	11.374***
IP Restaurants	2.809	0.401	7.000***
PPI Meats	2.785	0.411	6.773***

Notes: SE= Standard Error, *** Denotes significance at .01 level.

The model comparison (Full vs. Parsimonious Models) showed that the Full model had an adjusted R-squared value of 12.8% for Cheesecake Factory; whereas, the parsimonious model recorded an adjusted coefficient of determination of .207 (See Table 30). For Darden Restaurants, the full model explained 68.9% of the variation in OCFpU. Yet, the examination of the adjusted R^2 value (Adj. R^2 = .615) revealed that the parsimonious model accounted for a higher level of variation (Adj. R^2 = .654) in OCFpU by utilizing only three variables.

Table 30. Model Fit Comparison for the three Companies (on OCFpU)

Model	R^2	Adj. R^2	Sig.
Darden			
Full Model*	.689	.615	.000
Parsimonious Model**	.679	.654	.000
DW Value	2.372		
Cheesecake			
Full Model*	.227	.128	.094
Parsimonious Model**	.258	.207	.004
DW Value	2.451		
Outback			
Full Model*	.861	.832	.000
Parsimonious Model ***	.845	.831	.000
DW Value	1.427		

Notes: * Full model consists of all 8 variables (IP, EI, UI, TS, DR, Output, IP Restaurants, and PPI Meats),
** Parsimonious model consists of three variables (Output, IP Restaurants, and PPI Meats)
***Parsimonious model consists of four variables (Output, IP Restaurants, PPI Meats and TS)

The regression analysis for Outback retained a total of four variables of which three were the original industry risk variables. The results encountered in this investigation clearly revealed that the industry risk variables survived the rigor of statistical analysis and remained as the main determinants of variability in OCFpU after controlling for the effects of macroeconomic variables.

Robustness Tests

Alternative Operationalization of Industry Variables

Hair et al. (1998) claim that, the use of factor scores in subsequent analysis creates some challenges in replication of the study and may also create difficulties in interpreting the results. In order to address these shortcomings, the author used an alternative specification of restaurant industry factors by using composite scores of these three dimensions. That is, each of the variables was standardized and later assigned equal weight in creating an index variable for each

of these factors. As a final step, the researcher regressed the lagged values of these three

indices/composites over industry stock returns and OCF/S.

The results were similar to those obtained by factor scores as the three industry indices

explained approximately 4% of the variation in stock returns. This value was similar to 6.7%

obtained by the regression analysis with factor scores and both estimates were not significant at

.05 level. In addition, the t values of industry composites were not significant at .05 level which

was similar to the findings obtained with factor scores. There were no issues related to

multicollinearity and autocorrelation as judged by the respective statistics (DW and VIF).

The regression of industry composites on OCF/S was able to explain 12.8% of the

variation in OCF/S which was lower than the R-squared value of the analysis with factor scores

(.323); however, the coefficient of determination was still significant at .05 level. An

examination of regression coefficients indicated that only Output was significant at .05 level

(t=2.477, p= .018) while the other two indices were not significant. This finding is similar to the

investigation conducted with factor scores and no signs of multicollinearity and autocorrelation

were detected. The author concluded that the results are robust even if one elects to use the

composites of industry factors in lieu of factor scores.

<div align="center">Controlling for Market Return</div>

In order to check for robustness of the results related to macroeconomic factors, industry

factors and dummy variables in their relationship to stock returns, the author used the value-

weighted CRSP return index to control for market effects. The results indicated that in the

equation for macroeconomic factors, the addition of the market index resulted in significant R-

squared change but it did not affect the level of significance of EI variable and the Sep 11

dummy. In addition, the addition of market index made TS significant. As for the industry

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model equation, the level of significance remained the same for September 11 dummy and all other industry variables were not significant. This shows that the effect of dummy variable and the other significant variable (EI) on stock returns remained unchanged after controlling for market return.

<div align="center">Criterion Validity</div>

Criterion (concurrent) validity can be defined as the correlation between instrument measurement items and, known and accepted standard measures or criteria. Ideally these criteria are direct, objective measures of what is being measured (Garson, 2005). In order to assess the criterion validity of the restaurant model the author selected another variable that is associated with OCF/S: Monthly Sales for Dining and Drinking Places as reported by U.S. Census Bureau. The main reason for selecting restaurant industry sales was because this indicator is tracked by a reputable government agency and is not confounded by the scaling issues of aggregating individual restaurant firms.

The monthly values were converted into quarterly changes to achieve uniformity with the previous analyses of this research study. In addition, restaurant industry sales were adjusted for inflation and seasonality. The cross-correlation functions demonstrated that there were no lead-lag effects between industry variables and restaurant industry sales. As a result, all independent variables were used contemporaneously.

The regression results indicated that the industry variables accounted for 87.3% of the explained variation in sales but this finding was shadowed by the first-order autocorrelation problem (DW=1.216). The autoregression procedure using Prais-Winsten method revealed that the corrected model explained 23.2% of the explained variance in the restaurant industry sales. This value was similar to the R-squared value of OCF/S (.323) and was significant at .01 level.

In addition, all three restaurant dimensions were significant at .05 level which showed that Output, IP Restaurants, and PPI Meats had a positive effect on restaurant sales. The significant coefficient of determination of restaurant sales endorsed the criterion validity of the model.

Limitations

The findings of this study come with some considerable limitations that may affect the generalizability of the results. First, it should be noted that the restaurant industry model consisted primarily of commodity related variables tracked by the National Restaurant Association. This means that items such as coffee prices and wheat prices were not included in the analysis. The author is cognizant of the fact that the NRN Index consists of fairly heterogeneous sample which limits the applicability of the industry model.

Second, analyzing all the restaurant firms in aggregate as a portfolio creates additional challenges. Particularly, scaling of the operating cash flow is an insurmountable task as the traditional method of scaling the cash flows by total assets is not applicable to the restaurant industry. This is due to the fact that the majority of the companies in the NRN Index franchise a considerable percentage of their units, and their assets are primarily intangible as they receive royalty fees in return for permitting the franchisees to use their brand names.

In addition, the author recognizes the challenges associated with analyzing the relationships between U.S.-based economic variables (macroeconomic and industry) and variation in operating cash flows as numerous franchising firms have their units outside of the United States. The model may not perform at a desired level for the companies which derive a significant portion of their cash flows from foreign countries. Instead of dealing with this concern at portfolio level, the researcher decided to analyze three individual companies who earn

at least 75% of their operating cash flows from North America and their business units are either totally or heavily owned by their parent firms.

Last, the author acknowledges the fact that while the study adjusted for seasonality and inflation effects, it did not take into account the business cycle and the life-cycle of the restaurant industry. As Choi (1999) pointed out in his study, the average length of business cycles of restaurant industry (calculated peak-to-peak) was 8 years. Since the present study encompassed a total of 12 years (1993-2004) there is a possibility that internal value drivers (OCFpU, LCpU, and FCpU) might have been influenced by the business cycle effects.

Summary of the Findings

This study explored the underlying dimensions of the restaurant industry risk construct. The findings revealed that industry risk construct consisted of three latent indicators: Output, IP Restaurants, and PPI Meat. The underlying restaurant dimensions demonstrated a reasonable level of reliability and construct validity. In addition, the addition of nominal variables improved explained variance both for the macroeconomic and the industry models as September 11 variable had a significant negative relationship in both equations.

The next part of the study tested the relationships of macroeconomic risk and industry risk indicators with the total risk variables of the restaurant industry portfolio. The results showed that expected inflation had a positive significant effect on the restaurant stock returns as none of the other macroeconomic and industry variables had significant relationships with the restaurant stock returns. On the other hand, only Output had a positive significant relationship with the OCF/S of the restaurant portfolio, while the remaining macroeconomic and industry variables did not have a significant relationship with OCF/S.

A firm-level analysis showed that the industry model accounted for a significant variation

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in OCFpU, FCpU, and LCpU for the three casual-dining companies. At a variable level, all external restaurant value drivers were significant at .05 level. A comparison of a full model with parsimonious model indicated that the restaurant value drivers were retained in the final model for all three firms. In all cases, the industry model variables remained significant in the parsimonious model.

CHAPTER 5

DISCUSSION AND CONCLUSIONS

Introduction

This chapter is concerned with the discussion of the results reported in Chapter 4 and suggestions for future studies to pave the way of this avenue of inquiries related to industry value drives and risk levels of the restaurant companies. A detailed discussion of the research questions and relationships that were proposed is conducted, as well. As a final step, the implications for the managers in the restaurant industry are offered so that the restaurant industry model can be used in practice.

Discussion

Research Question 1

Factor analysis revealed that economic value drivers can be represented along three dimensions. However, these dimensions are strictly economic and do not explicitly make a reference to the other types of risk in the restaurant industry. The analysis here implies that industry-specific economic variables can be represented by three factors.

The author arrived at this factor solution after applying several decision criteria. Particularly, severe multicollinearity among CPI and employment variables created considerable challenges in the model building process. In addition, since the majority of the variables (8 out of 14) loaded on the first factor ("Output") this presented another set of difficulties in this study. This clearly demonstrates that given the officially reported and tracked economic data, model building for restaurant industry is still a formidable task. Yet, by applying some logical and statistical rules, the author arrived at a three-factor solution whose indicators had sufficient reliability and withstood the rigorous tests of convergent and discriminant validity.

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The labeling of the factor was another concern specifically for the first factor. This sub-construct of restaurant industry risk was represented by eight variables which were very diverse in their nature (five IP variables, two CPI variables and an employment variable). Due to the fact that industrial production variables were heavily represented under this factor and generally are referred to as output indicators in the economics field, the first factor was labeled "Output". The second factor was represented by producer price index variables and since all three indices were related to meat products the factor was labeled as PPI Meats. The third factor had an interesting structure by virtue of encompassing two IP variables (dairy and butter) and one employment variable (AWKLH). One would argue that these three variables are incommensurable. Yet, a closer investigation reveals that the loading of AWKLH is negative which implies that as the production output for dairy and butter increases the average weekly hours in hospitality decreases. That means that in this particular case AWKLH may be a proxy for another variable that is not tracked by the government agencies which is negatively correlated with the IPDAIRY and IPBUTTER and not highly correlated with the other employment variables.

A closer look at the 14 variables, which represented the three restaurant dimensions, shows that two of these variables were retained among the 13 (out of more than 100) variables by Chung (2005): IPMEATS and CPIFVEG. IPMEATS was particularly important as it had the highest loading on the "Output" dimension. In addition, six of the variables that remained in the final factor solution, showed significant correlations with OCFpU in the casual-dining segment in Chung's study: namely IPPORK, IPPOULT, IPDAIRY, IPCHEESE, IPBUTTER, and AHERH. This indicates that variables that make up the industry risk dimensions in the restaurant industry remained strong even when they were analyzed along with more than 70

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macroeconomic variables in Chung's (2005) study (Chung used more than 100 variables of which approximately 30% were specific to the restaurant industry).

Another important aspect of the model is that it is built upon the premise of allowing any of the variables to load significantly only on a single distinct dimension. Therefore, the author would like to emphasize that variables that loaded significantly on more than one factor (IPSFDR, PPIMILK, PPIDAIRY, PPIBEEF, and IPPOULT) might still be important determinants of variation in operating cash flows or stock returns if analyzed in a different manner. This study does not make any claims about discovering the most important restaurant industry economic variables that affect the restaurant firms' risk. Rather this research effort demonstrates that 30 of the most widely cited restaurant industry-specific economic variables in the restaurant industry can be grouped under three factors. It is imperative to reiterate that from strategic management standpoint these dimensions represent the economic category of the remote environment. Thus, this model makes no explicit reference about the other four categories of the remote environment.

The final restaurant risk model consisted of three factors and 14 variables. The three dimensions were labeled as "Output," "IP Restaurants," and PPI Meats. "Output" was the most diverse and heavily populated factor of the model as it was represented by a multitude of different variables. On the other hand, "PPI Meats" emerged as the most homogenous and most specific factor because it captured three PPI variables that were related to meat.

<div align="center">Research Question 2</div>

This question investigated the hypotheses related to the original APT variables of Chen et al. (1986) that represented the macroeconomic construct and their effect on overall risk of the restaurant portfolio. The first set of hypotheses showed that only expected inflation (EI) had a

significant effect on industry stock returns. This finding differs from the previous study concerned with the restaurant industry of Naka and Barrows (1994) who reported that the relationship between EI and restaurant stock returns was not significant. The differing results between two studies can be attributed to three reasons. First, Naka and Barrows did not take into account the lead-lag effects which might have affected their findings. Second, their study used an extremely small sample size (5 firms) which may have resulted in the error in variance (EIV) problem. Last, the present study uses quarterly returns; whereas, the majority of the studies that deal with macroeconomic indicators used monthly data. In addition, the sign of the regression coefficient for EI was positive which was opposite to the seminal study of Chen et al. (1986).

Overall, the five macroeconomic variables accounted for approximately 40% of the variation in the restaurant stock returns. This is a considerable improvement over figures reported by Naka and Barrows (R^2=12%) for the restaurants and by findings of Connor (1995) (R^2=10%) in the mainstream finance field. This improvement in explained variance can be attributed to the utilization of lead-lag effects and quarterly stock returns as opposed to monthly returns. This is in line with the findings of Fama (1981, 1990) and Kaul (1987) who stated that real activity explains more of the return variation when return horizons are increased.

The inclusion of the two dummy variables (Mad Cow and September 11) resulted in significant improvement in the explained variance of restaurant industry stock returns. The major reason for this contribution was due to "September 11" variable which was significant at .01 level and this event had a negative effect on stock returns as in Chen et al. (2005). In addition, the TS variable became significant after including the dummy variables which may denote that industry shocks such as Mad Cow outbreak and terrorist attacks of September 11 may make the long-term inflationary pressure more evident.

The inclusion of nominal variables improved the explained variance significantly (adj. R^2 increased from 31.6% to 44.9%). This increase is even more substantial when compared to the improvement in Chen et al.'s (2005) study, where the addition of nine qualitative variables augmented the explained variation by 4% (from 8% to 12%). This implies that qualitative variables are able to capture more variation when used over a longer return horizon (e.g. quarterly vs. monthly). In addition, this study reveals that the inclusion of nominal (qualitative) variables from the other categories of the remote environment of the restaurant industry explains additional variability in the returns of the restaurant portfolio even after controlling for macroeconomic effects.

As for operating cash flow, none of the macroeconomic variables had a significant effect on the OCF/S of the restaurant portfolio. In 1981, Fama reported that IP helped explain fluctuations in aggregate corporate cash flow. Further, the same author (Fama, 1990) found that when the future rates of IP is used as a proxy for expected cash flows, IP is able to explain 43% of the variance in annual returns. Although, the regression coefficient for IP in this study had the same sign (positive) as in Fama (1981, 1990), the regression coefficient was not significant at .05 level. Overall, the five macroeconomic explained 1/3 of the variation of OCF/S of restaurant portfolio; however, as it was mentioned before, the intercorrelation among independent variables and relatively small number of data points to variables ratio (48 to 5) produced non significant t-values for the individual variables. In contrast to stock returns, OCF/S was not affected by the two qualitative variables used in this study. This implies that there was no significant difference between OCF/S during the periods of industry shocks and normal operating periods. The author of this study speculates that the non-significance was borne due to using OCF/S ratio as opposed to "pure" OCF.

Among the first five posited relationships only the relationship between EI and stock returns was significant at .05 level. Yet, due to the use of quarterly stock returns the macroeconomic model explained approximately 40% of the variation in stock returns. However, none of the macroeconomic variables had a significant relationship with OCF/S as operating cash flows represent the unsystematic risk within the firms.

<div align="center">Research Question 3</div>

The three hypotheses related to the industry model and restaurant stock returns were not rejected which showed that none of the three variables has an effect on restaurant industry stock returns. This led the author to believe that although the economic variables such as meat price indices, dairy, fish and numerous other commodities were frequently mentioned in the annual reports of the restaurant firms, these variables did not account for time-varying variation in stock returns even after the consideration of lead-lag effects. Hence, the author postulates that these industry variables might perform better when return horizons are longer than quarters. Otherwise, it may be speculated that the effect of industry variables is subsumed by the macroeconomic variables when stock returns are measured on a quarterly basis or on shorter return horizons. This is borne by the fact that the variation in stock returns reflects both the systematic and unsystematic risk. While, the variability of OCF/S captures the unsystematic risk as OCF is firm-specific.

The Output variable surfaced as the only significant variable influencing the operating cash flows to sales (OCF/S) in the restaurant industry. The sign of the regression coefficient was positive which demonstrated that increases in the "Output" factor result in increased OCF/S. A closer look into this factor reveals that major industry indicators that are commonly discussed in the restaurant industry are the ones that make up the "Output" index such as CPI Index (a

composite of five restaurant industry CPI indicators), five indicators related to industrial production and one aggregate weekly hours indicator. Indeed, this factor resembles growth in IP variable used in multiple studies in the mainstream finance field by numerous researchers (e.g. Chen, 1991; Chen et al., 1986; Fama, 1981, 1990). This resemblance is substantiated by the high contemporaneous correlation between IP and Output (r = .916, sig. .01). Yet, IP did not have a significant effect on OCF/S due to its correlation with the other independent (macroeconomic) variables. While, on the other hand, Output remained significant in the restaurant model by virtue of its orthogonal estimation to the other two dimensions (IP Restaurants and PPI Meats).

The author of this study argues that the main reason why the other two industry variables' regression coefficients were not significant is due to the use of an aggregate restaurant portfolio. The utilization of 75 restaurant firms, which are very heterogeneous, in a single index casts some shadow over the effects of these two variables. In addition, the presence of some large franchising firms such as McDonalds and Starbucks prevents the model from reflecting the true influence of these two dimensions on the variation in OCF/S of the restaurant portfolio due to the fact that the fluctuation of OCF/S ratio might be less relevant for the franchise corporations (but may be critical for the individual business unit which feels the effects of commodity prices and employment conditions almost on a day-to-day basis).

Although the industry variables did not account for a significant variation in stock returns, this picture has changed after adding nominal variables into the regression equation. September 11 variable not only maintained its negative significant relationship with stock returns (as in RQ2) but it also improved the overall coefficient of determination by almost 20% which is significant both in statistical and practical terms. The author of this study speculates that the main reason for the improvement in the obtained results with the addition of September 11

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dummy is due to the global nature of this variable. This is well-documented by Chen et al.

(2005) who showed the importance of this variable in Taiwan.

Research Question 4

The results of RQ4 make up the essence of this study as here OCFpU is used not only as

an indicator of risk but also as an internal value driver that is influenced by the industry value

drivers in the task environment. Although autocorrelation created some difficulties in estimating

the final results, overall, the findings showed that the industry model accounts for a significant

percentage of explained variance in OCFpU for all three firms. Another key issue in this finding

is that, for sake of parsimony and uniformity, the author estimated the models in a static manner

for all three firms and yet the results provided a considerable support for the industry model.

This clearly demonstrates that the model would possibly perform at a comparable level or better

when lead-lag effects of the independent variables on OCFpU are taken into account. The

researcher speculates that using dynamic version of the model would be able to explain even

more variation in the other internal restaurant value drivers (FCpU and LCpU). These arguments

are based on the fact that Outback Steakhouse and Cheesecake Factory negotiate fixed price

contracts with their suppliers for some commodities they use in their production and Darden

Restaurants utilizes derivatives to manage commodities pricing risks inherent in its business

operations.

This research question revealed that the three-factor industry model managed to explain a

significant portion of the variance in the internal value drivers (OCFpU, FCpU, and LCpU) for

the three casual-dining companies. Although the external industry value drivers accounted for

approximately 25% of the OCFpU of Cheesecake factory, all three variables were still significant

at .05 level. It should be stressed that in 3 of the 9 estimations the author needed to re-estimate

the regression equations as first-order autocorrelation was detected. However, even after applying the autoregression procedure, the model explained approximately between 32 and 64 percent of the variation in internal value drivers. It should also be emphasized that throughout the analysis, the results remained significant at a variable level (with the exception of one) for the external value drivers on all the internal value drivers of the restaurant industry.

On one hand, one would argue that including labor- and commodity-related variables into the model should almost automatically capture the variation in the OCFpU, LCpU, and FCpU. Yet, on the other hand, it should be remembered that some of these indicators are related to the hospitality and leisure industries as a whole rather than specifically capturing changes in employment in dining and drinking places.

Overall, 26 of the 27 variables were significant at a variable level in the 9 estimated regression equations. The author of this study argues that the reason for the difference in results between portfolio and firm-level analysis is that at a firm level all companies were company-owned or had low-franchising ratios. This allowed for adjusting OCF for owned units, inflation and seasonality which increased the robustness of the results.

Research Question 5

The author estimated the final (parsimonious) model in this study in accordance with the criteria of Hendry and Richard (1982) and Brooks (2002). These authors conjectured that a final acceptable model should satisfy several criteria:

1. Be logically plausible.

2. Be consistent with underlying financial theory.

3. Have regressors that are uncorrelated with the error term.

4. Have parameter estimates that are stable over time in the entire sample.

5. Be capable of explaining the results of all competing models and more.

Particularly the final criterion emerges as the overarching factor which is also referred to as encompassing principle (Brooks, 2002). In other words, when a model is nested within a larger model it always trivially encompasses the respective model. However, a smaller model is always favored if it can explain all of the results of the larger (full, saturated) model; this is known as parsimonious encompassing (Brooks, 2002).

The backward elimination procedure revealed that the parsimonious encompassing was accomplished by the three industry dimensions. That is, all of the industry variables remained in the final model for all three firms and were significant at .05 level. This was achieved by satisfying all of the criteria mentioned above and particularly the fact that the adjusted-R^2 values for parsimonious model for all three companies were either higher or were very close to the adjusted-R^2 value of the full model. This emerges as one of the important qualities of the industry model. The case of Cheesecake Factory is especially notable where the adjusted-R^2 increased from 12.8% to 20.7% with the removal of the five macroeconomic factors from the full model. It is an opportune time for a researcher to ask the following critical question: Where do these findings leave us? Does this show that macroeconomic variables in the remote environment are less important than the industry variables?

The answer to this question may be found in the future years to come but at this stage this research effort demonstrated that the industry model, which consists of IP, PPI and CPI variables, is able to explain more variance than all variables collectively (industry and macroeconomic) after adjusting for the degrees of freedom. Yet, it should be noted that this does not explicitly mean that the APT variables are unimportant. Rather, they might be important on their own account in explaining the variation in OCFpU for individual firms but their effect

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disappears after the restaurant industry variables are included in the regression equation as industry variables capture macroeconomic effects. Then, it may be hypothesized that macroeconomic variables affect OCFpU not only in a direct but also in an indirect way (through the industry variables as the macroeconomic indicators are exogenous to industry value drives of the task environment). As the theoretical relationship between macroeconomic and industry risk constructs is in its infancy stage, the discussion of this issue is beyond the scope of this study.

This section provides further support to the claim that industry effects are important determinants of explaining the variation in profits (McGahan & Porter, 1997). Although this section does not explicitly make a side-by-side comparison of the macroeconomic and industry effects, it does demonstrate that industry dimensions survive when simultaneously regressed with macroeconomic indicators over the value drivers of individual restaurant firms. These results can also be applied to the systematic vs. unsystematic risk analogy of students in strategic management area. That is, systematic risk (e.g. APT) variables might be still viewed as important determinants of stock returns of the restaurant firms. Nevertheless, their importance severely diminishes when used in estimating the OCFpU of individual restaurant after controlling for the external restaurant industry value drivers. In other words, since the OCF is a major component of Free Cash Flows (FCF) and as FCF is used in estimating firm value, then the variation in OCF becomes a critical component in creating value for the firm. Thus, as the industry model helps explain a significant portion of variation in OCF, the executives may use the model to estimate their OCF's risk exposure. By the same token, they can use the other value drivers such as labor cost, beverage cost, food cost, and same store sales to understand which variables of the restaurant model explain the variance in their firm's value drivers.

Managerial Implications

The present study provides support to the managerial view that understanding the industry dynamics is important for the long-term viability of the restaurant firms. The model put forward here managed to clarify the picture related to the internal value drivers at a firm level for the restaurant industry. The findings of this scholarly endeavor supply a sound analytical tool not only for the executives of the publicly-traded restaurant corporations but also for the managers of the individual business units (regardless whether those units are part of a publicly-traded firm or are independently owned). Indeed, this is the trait that makes findings of this study encompassing as it extends beyond traditional studies in finance that are specifically focused on publicly-traded corporations.

The following example may serve to illustrate the strength of the present model: Let us assume that a unit manager of a fast-food restaurant wants to know what variables lead to variation in OCFpU, LCpU and FCpU. Then she can use monthly or quarterly data from her own unit and regress these data against the external value drivers in order to assess the importance of these external drivers on her unit. What is more, if a regional manager conducts this analysis, then she can run the same analysis for all units in the region. In addition, by analyzing the regression coefficients of each of the external value drivers, the managers may estimate the change in the dependent variable (e.g. OCF) due to one unit change in the independent variable (e.g. PPI Meats).

It should be noted, however, that the model may not perform well for the companies whose product line differs from that of conventional foodservice firms. Some examples for these non-conventional companies could be Starbucks, Inc. (Coffee), Krispy Kreme Donuts (Doughnut Shops), and Friendly Ice Cream Corporation (Ice Cream). These companies do not have any

meat products on their menu and thus, PPI Meats dimension may not apply to them at all. In addition, some of the variables that capture the "Output" factor may not be relevant to these companies as well. Therefore, the model developed in this research is more beneficial for a restaurant firm whose internal value drivers are influenced by commodity and producer prices along with employment variables.

Future Studies

This study launches a stream of research that delves into the idiosyncratic risk factors/variables that influence the stock returns and operating cash flows of the restaurant industry. The main reason for treating this type of risk as unsystematic is that the restaurant portfolio can be viewed as a single stock on the stock market. Thus, investors may not consider themselves diversified as they hold all the stocks of the restaurant industry portfolio. There is a need to further enlighten this picture by probing more in-depth into this issue in order to investigate the arguments of financial and strategic management (e.g. Amit & Wernerfelt, 1990; Bettis, 1983; Downe, 2000; Fama & French, 1993: Goyal & Santa-Clara, 2003; Lubatkin & Schulze, 2003) concerned with relevance of unsystematic risk for company executives and undiversified investors.

Although the industry value drivers did not perform as impressively at industry (portfolio) level, the findings did demonstrate that industry variables were able to account for a considerable portion of variation in cash flows, labor costs, and food costs at a company level. Thus, alternative portfolio groupings should be developed in order to better capture the variation in OCF for the different restaurant segments (casual-dining vs. fast-food) or business format (company owned vs. franchised). The author conducted a small experiment by selecting 25

franchising and 18 company-owned companies based on the sampling of Aliouche and Schlentrich (2005). However, there was not a noticeable difference between two portfolios in terms of explained variance in OCF/S. The author of the present study hypothesizes that by using some alternative scaling procedures for OCF, future researchers might be able to explain more of the variation in OCF for the non-franchising firms compared to franchising corporations.

It should be reiterated once again that this study did not explore the relationships between macroeconomic variables and industry value drivers. The next step in this line of inquiry would be to assess the relationships between these constructs in order to demonstrate the indirect effect of the macroeconomic value drivers on the total risk of the restaurant industry and internal value drivers of individual restaurant firms by utilizing the restaurant industry dimensions identified in this study. The accomplishment of this task will require a longer observation period in order to accommodate causal modeling that considers direct and indirect effects (path analysis) of macroeconomic variables. Path analysis will necessitate availability of at least 100 data points which equals to 25 years measured on a quarterly basis. An additional benefit of the path analysis is that it is more powerful than regression analysis in building causal relationships as regression is based mainly on correlation and does not explicitly denote causality.

In addition, this research study used correlational analysis in arriving at the underlying dimensions of the restaurant industry risk. Using exploratory analysis required the elimination of some of the variables due to their significant loadings on more than one factor. As a result, dimensionality was the major thrust in building the industry model. However, there may be some pundits that might argue that correlation is not a stable long-term measure and is not able to capture the long-term equilibrium among variables. The results of this study should be replicated by using a longer observation period to assess the long-term equilibrium among

variables by using co integration analysis of Granger (1981) and Engle (1982). The utilization of this method is likely to further develop and validate the restaurant industry risk model.

Another critical characteristic of this study is that it focused strictly on operational aspects of the restaurant firms and did not take into account the financing and investing activities. It may be fruitful to examine how the industry model performs when regressed over free cash flows of restaurant companies on a time-series as opposed to cross-sectional basis. Consequently, one can make an inference about the resource allocation process step of the co-alignment principle in a dynamic setting (e.g. time-varying).

Conclusions

To date, this study is the first of its kind to attempt to explore the underlying dimensions of the restaurant industry value drivers and analyze them in a time-series analysis. The approach of this research inquiry differed from the previous works conducted in hospitality field (e.g. Borde, 1998; Chathoth, 2002; Chung, 2005; Gu & Kim, 2003b) and offered improvements in multiple aspects. These aspects are described in more detail below.

First, the author of this study made a clear distinction between macroeconomic and industry variables as opposed to combining both of these categories as they represent different layers (remote and task) of the environment construct of the co-alignment principle. Second, the author used a sophisticated measure of OCF which was adjusted for accruals as suggested by Fairfield et al. (2003) and Sloan (1996) rather than using a general formula for OCF (Operating Cash Flow = Earning Before Interests and Taxes (EBIT) + Depreciation- Taxes) that was used by Chung (2005).

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While compared to the approach of Chathoth (2002), the present study made an effort to include all the companies that had at least 36 months of stock trading on the major U.S. stock exchanges as opposed to eliminating firms that do not have data for the full observation period. In addition to the aspects mentioned above, this study focused on time-varying variations of OCF and stock returns in order to enable restaurant industry practitioners to use the model in forecasting the future values of their internal drivers. While in cross-sectional studies conducted in hospitality field (Huo & Kwansa, 1994; Kim & Gu, 1998; Gu & Kim, 2003b; among others) this is not feasible. Another major issue that makes findings of the present study potent is the effort to put forward a theory that satisfies both logical and statistical requirements of theory construction. That means that rigorous checks for reliability and construct validity of the measures were conducted.

Based on the findings discussed above, the present research makes an important contribution to the body of knowledge by demonstrating that industry variables account for more than half of the variation in OCFpU at a firm level. This result is robust even after adding the macroeconomic variables into the regression equation. However, these results must be interpreted with caution as these industry dimensions are also affected by the macroeconomic variables and this relationship is not investigated in this study. Therefore, it is not exactly known how the five APT variables influence the internal value drivers indirectly (through the industry variables). Only after building up a strong theoretical base and having more data points these relationships can be further investigated.

From the strategic management perspective, this study demonstrated that qualitative variables such as terrorist attacks of September 11 are important in altering the stock returns of the restaurant firms and thus, are affecting the overall risk of the restaurant portfolio. The

addition of qualitative variables provides an additional explanation in variation in stock returns for the restaurant portfolio over and above what has been explained by the macroeconomic and industry indicators. However, the qualitative variables did not provide any explanation of variation in OCF which may be partly caused by the method that was employed in weighting the industry portfolio. That is, as the portfolio was weighed by sales, a drop in sales in the next 6 months after the events of September 11 may reduce the OCF of a given firm. However, the ratio of OCF/S may remain the same at its pre-September 11 levels if both OCF and sales decrease by the same proportion. Hence, the author of this study conjectures that a firm-by-firm analysis may better reflect the effect of qualitative variables on restaurants' OCF.

Although this study leaves much to be desired for future research, it does shed some light into solving the conflicting views between financial and strategic management researchers. This effort demonstrated that macroeconomic variables account for a significant variation in restaurant portfolio stock returns but the same can not be said for the relationship between industry value drivers and stock returns. This implies that, while macroeconomic variables retain their status as critical variables in explaining historical stock return variation, restaurant industry value drivers are more accurate in accounting for the variation in operational aspects of the firm (OCF, labor cost and food cost). This statement carries an utmost importance to the debate of risk in these two fields. Put in other words, it suggests that although strategic management recognizes the importance of the events that occur in the remote environment (some of these events are characterized as forces driving change) the managers ultimately focus on how these forces move down trough the levels of environment (remote, task, functional and firm) to effect their company's performance by means of quantitative and qualitative indicators in the task environment of the restaurant industry. This demonstrates that portfolio investment

managers may insist on focusing on systematic (macroeconomic) factors that influence the stock returns of the individual restaurant companies. On the other hand, the restaurant executives are likely to scan the macroeconomic variables as part of the economic category of the remote environment but later assess their impacts through filtering the remote variables through the industry-specific value drivers that are housed in the task environment of their businesses.

This study offered a small, incremental step toward understanding the relationship between the environment domain and the overall risk of the restaurant industry. While some of the conundrum surrounding the relationship between the environment and firm-specific risk was partly solved, the present study leaves the door wide open for future studies that should capture the dynamic relationships among the two other constructs of the co-alignment principle: strategy choice and firm structure. It remains to be seen how hospitality financial and strategic management literature will fill this void in the body of knowledge by moving from cross-sectional to time-series analysis.

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APPENDICES

APPENDIX A

LIST OF RESTAURANT FIRMS

Company	Ticker
AFC Enterprises Inc.	AFCE
Applebee's International Inc.	APPB
Ark Restaurants Corp.	ARKR
Avado Brands Inc.	AVDO
Back Yard Burgers Inc.	BYBI
Benihana Inc.	BNHN
Big Buck Brewery Inc.	BBUC
Bob Evans Farms Inc.	BOBE
Briazz Inc.	BRZZ
Brinker International Inc.	EAT
BUCA Inc.	BUCA
California Pizza Kitchen Inc.	CPKI
CBRL Group Inc.	CBRL
CEC Entertainment Inc.	CEC
Champps Entertainment Inc.	CMPP
Checkers Drive-In Rest.	CHKR
Cheesecake Factory Inc.	CAKE
Chicago Pizza & Brewery	CHGO
CKE Restaurants Inc.	CKR
Cosi Inc.	COSI
Creative Host Services Inc.	CHST
Darden Restaurants Inc.	DRI
Dave & Buster's Inc.	DAB
Denny's Corp.	DNYY
Diedrich Coffee Inc.	DDRX
Eateries Inc.	EATS
Elmer's Restaurants Inc.	ELMS
Famous Dave's of America	DAVE
Flanigan's Ents. Inc.	BDL
Fresh Choice Inc.	SALD
Friendly Ice Cream Corp.	FRN
Frisch's Restaurants Inc.	FRS
Garden Fresh Rest. Corp.	LTUS
Good Times Restaurants Inc.	GTIM
Grill Concepts Inc.	GRIL
Host America Corp.	CAFE
IHOP Corp.	IHP
J. Alexander's Corp.	JAX
Jack in the Box Inc.	JBX
Krispy Kreme Doughnuts	KKD
Landry's Restaurants Inc.	LNY
Lone Star Steakhouse	STAR
Luby's Inc.	LUB

Main Street & Main Inc.	MAIN
Max & Erma's Rest. Inc.	MAXE
McDonald's Corp.	MCD
Meritage Hospitality Group	MHG
Mexican Restaurants Inc.	CASA
Morgan's Foods Inc.	MR
Nathan's Famous Inc.	NATH
O'Charley's Inc.	CHUX
Outback Steakhouse Inc.	OSI
P.F. Chang's China Bistro	PFCB
Panera Bread Co.	PNRA
Papa John's Int'l. Inc.	PZZA
Peet's Coffee & Tea Inc.	PEET
Piccadilly Cafeterias Inc.	PIC
Pizza Inn Inc.	PZZI
Quality Dining Inc.	QDIN
Rare Hospitality Int'l. Inc.	RARE
Red Robin Burgers Inc.	RRGB
Roadhouse Grill Inc.	GRLL
Rubio's Restaurants Inc.	RUBO
Ruby Tuesday Inc.	RI
Ryan's Family Steak Houses	RYAN
Schlotzsky's Inc.	BUNZ
Shells Seafood Rest. Inc.	SHLL
Smith & Wollensky Rest.	SWRG
Sonic Corp.	SONC
Star Buffet Inc.	STRZ
Starbucks Corp.	SBUX
Steak n Shake Co.	SNS
Total Entertainment Restaurant Corp.	TENT
Triarc Companies Inc.	TRY
Tumbleweed Inc.	TWED
Wendy's International Inc.	WEN
Worldwide Rest. Concepts	SZ
YUM! Brands Inc.	YUM

APPENDIX B

CORRELATION MATRIX FOR THE PROPOSED INDUSTRY VARIABLES
(INCLUDING INDEXED VARIABLES)

		FAH	CPPMF	CPFSH	CPICHS	CPIFVEG	CPITOM	CPIINDX	AWKLH	AGGWKH	AGWPAYL	AHERHL	ALLEMPL	AHEARN
FAH	Pearson	1												
	Sig. (2-tailed)	.												
CPPMF	Pearson	**0.964**	1											
	Sig. (2-tailed)	0.000	.											
CPFSH	Pearson	**0.929**	0.858	1										
	Sig. (2-tailed)	0.000	0.000	.										
CPICHS	Pearson	**0.977**	**0.932**	**0.922**	1									
	Sig. (2-tailed)	0.000	0.000	0.000	.									
CPIFVEG	Pearson	**0.950**	**0.906**	**0.901**	0.903	1								
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	.								
CPITOM	Pearson	0.814	0.777	0.786	0.784	0.867	1							
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	.							
CPIINDX	Pearson	0.972	0.935	0.927	0.943	0.983	0.913	1						
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	.						
AWKLHL	Pearson	-0.402	-0.491	-0.208	-0.340	-0.375	-0.267	-0.365	1					
	Sig. (2-tailed)	0.000	0.000	0.012	0.000	0.000	0.001	0.000	.					
AGGWKHL	Pearson	0.729	0.675	0.766	0.731	0.689	0.499	0.690	-0.105	1				
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.212	.				
AGWPAYL	Pearson	**0.986**	**0.923**	**0.968**	**0.973**	**0.939**	0.811	0.964	-0.290	0.761	1			
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.			
AHERH	Pearson	**0.994**	**0.937**	**0.940**	**0.975**	**0.943**	0.807	0.965	-0.361	0.737	0.994	1		
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.		
ALLEMPL	Pearson	**0.987**	**0.947**	**0.966**	**0.965**	**0.946**	0.816	0.970	-0.350	0.755	**0.989**	**0.981**	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.	
AHEARN	Pearson	**0.991**	**0.931**	**0.943**	**0.975**	**0.937**	0.803	0.961	-0.345	0.732	**0.994**	**0.999**	**0.980**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.
AHELHL	Pearson	**0.934**	0.833	0.880	**0.931**	0.876	0.745	0.896	-0.261	0.689	**0.949**	**0.962**	**0.901**	**0.963**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000
AHEINDX	Pearson	0.993	0.933	0.948	0.976	0.942	0.807	**0.965**	-0.345	0.740	0.996	0.999	0.984	0.999
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPDAIRY	Pearson C	0.634	0.663	0.446	0.535	0.652	0.471	0.609	-0.590	0.357	0.548	0.600	0.583	0.587
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPCHEESE	Pearson	0.856	0.802	0.802	0.819	0.849	0.733	0.852	-0.259	0.633	0.839	0.839	0.850	0.836
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000
IPBEEF	Pearson	0.395	0.201	0.574	0.402	0.407	0.393	0.414	0.134	0.434	0.505	0.464	0.441	0.473
	Sig. (2-tailed)	0.000	0.016	0.000	0.000	0.000	0.000	0.000	0.110	0.000	0.000	0.000	0.000	0.000
IPPORK	Pearson	0.775	0.693	0.743	0.774	0.776	0.658	0.774	-0.195	0.571	0.784	0.797	0.740	0.795
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.019	0.000	0.000	0.000	0.000	0.000
IPMEAT	Pearson	0.962	0.877	0.922	0.938	0.936	0.801	0.945	-0.315	0.714	**0.965**	**0.971**	**0.948**	**0.968**
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPOULTLG	Pearson	0.978	0.930	0.901	0.948	0.940	0.797	0.953	-0.383	0.701	**0.959**	**0.970**	**0.962**	**0.966**

	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPSFDR	Pearson	0.271	0.173	0.538	0.335	0.280	0.337	0.323	0.356	0.418	0.383	0.295	0.382	0.308
	Sig. (2-tailed)	0.001	0.038	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
IPBUTTER	Pearson	0.441	0.435	0.284	0.445	0.389	0.289	0.392	-0.383	0.250	0.377	0.410	0.401	0.404
	Sig. (2-tailed)	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000
PPIBEEF	Pearson	0.724	0.806	0.520	0.697	0.655	0.534	0.675	-0.571	0.418	0.647	0.699	0.655	0.688
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PPIPORK	Pearson	0.412	0.565	0.328	0.402	0.325	0.254	0.367	-0.451	0.451	0.364	0.367	0.422	0.358
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PPICHEESE	Pearson	0.653	0.682	0.615	0.697	0.609	0.587	0.657	-0.218	0.536	0.630	0.619	0.661	0.620
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.009	0.000	0.000	0.000	0.000	0.000
PPOULTRY	Pearson	0.442	0.570	0.387	0.443	0.380	0.383	0.434	-0.241	0.312	0.387	0.379	0.459	0.374
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.000	0.000
PPMILK	Pearson	0.856	0.845	0.838	0.901	0.787	0.725	0.842	-0.254	0.663	0.859	0.845	0.864	0.849
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000
PPMEAT	Pearson	0.776	0.892	0.626	0.755	0.696	0.608	0.739	-0.556	0.490	0.709	0.736	0.745	0.727
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
PPDAIRY	Pearson	0.855	0.851	0.833	0.894	0.797	0.750	0.852	-0.255	0.657	0.854	0.841	0.863	0.841
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.002	0.000	0.000	0.000	0.000	0.000
CONSDIN	Pearson	0.380	0.376	0.482	0.345	0.446	0.385	0.430	-0.160	0.248	0.393	0.368	0.434	0.366
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.055	0.003	0.000	0.000	0.000	0.000

AH EARN	AHELH	AHE INDEX	IP DAIRY	IP CHEESE	IP BEEF	IP PORK	IP MEAT	IP POULT	IP SFDR	IP BTTR	PPI BEEF	PPI PORK	PPI CHES	PPI PLTRY	PPI MILK	PPI MEAT	PP DAIRY	CONS DIN
1																		
.																		
0.963	1																	
0.000	.																	
0.999	0.961	1																
0.000	0.000	.																
0.587	0.515	0.587	1															
0.000	0.000	0.000	.															
0.836	0.788	0.841	0.643	1														
0.000	0.000	0.000	0.000	.														
0.473	0.540	0.475	0.043	0.381	1													
0.000	0.000	0.000	0.609	0.000	.													
0.795	0.851	0.797	0.423	0.660	0.429	1												
0.000	0.000	0.000	0.000	0.000	0.000	.												
0.968	**0.952**	**0.971**	0.630	0.876	0.552	0.842	1											
0.000	0.000	0.000	0.000	0.000	0.000	0.000	.											
0.966	**0.914**	0.968	0.695	0.900	0.396	0.755	0.975	1										
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.										
0.308	0.261	0.317	-0.284	0.312	0.552	0.198	0.303	0.246	1									
0.000	0.002	0.000	0.001	0.000	0.000	0.017	0.000	0.003	.									
0.404	0.348	0.402	0.587	0.499	-0.029	0.133	0.441	0.548	-0.097	1								
0.000	0.000	0.000	0.000	0.000	0.729	0.113	0.000	0.000	0.249	.								
0.688	0.643	0.685	0.598	0.471	-0.093	0.600	0.618	0.672	-0.255	0.294	1							
0.000	0.000	0.000	0.000	0.000	0.266	0.000	0.000	0.000	0.002	0.000	.							
0.358	0.194	0.359	0.337	0.243	-0.112	-0.018	0.246	0.352	0.031	0.253	0.518	1						
0.000	0.020	0.000	0.000	0.003	0.182	0.832	0.003	0.000	0.713	0.002	0.000	.						
0.620	0.534	0.624	0.199	0.605	0.088	0.550	0.570	0.597	0.356	0.126	0.504	0.357	1					
0.000	0.000	0.000	0.017	0.000	0.297	0.000	0.000	0.000	0.000	0.134	0.000	0.000	.					
0.374	0.238	0.381	0.189	0.400	-0.229	0.242	0.283	0.366	0.219	0.018	0.434	0.467	0.691	1				
0.000	0.004	0.000	0.024	0.000	0.006	0.003	0.001	0.000	0.008	0.829	0.000	0.000	0.000	.				
0.849	0.780	0.850	0.332	0.712	0.301	0.684	0.784	0.796	0.446	0.292	0.603	0.397	0.847	0.581	1			
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	.			
0.727	0.614	0.727	0.558	0.546	-0.055	0.512	0.633	0.711	-0.026	0.295	0.920	0.730	0.625	0.627	0.718	1		
0.000	0.000	0.000	0.000	0.000	0.509	0.000	0.000	0.000	0.756	0.000	0.000	0.000	0.000	0.000	0.000	.		
0.841	0.773	0.845	0.310	0.732	0.279	0.699	0.781	0.794	0.452	0.242	0.609	0.406	0.892	0.638	0.972	0.731	1	
0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.000	0.000	0.000	.	
0.366	0.295	0.376	0.229	0.415	0.189	0.359	0.385	0.385	0.378	0.063	0.131	0.052	0.329	0.312	0.365	0.248	0.375	1
0.000	0.000	0.000	0.006	0.000	0.023	0.000	0.000	0.000	0.000	0.454	0.117	0.533	0.000	0.000	0.000	0.003	0.000	.

APPENDIX C

FIRST FACTOR SOLUTION

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.385	51.927	51.927	10.385	51.927	51.927	7.150	35.751	35.751
2	2.811	14.054	65.981	2.811	14.054	65.981	3.894	19.469	55.219
3	1.939	9.696	75.677	1.939	9.696	75.677	2.815	14.073	69.292
4	1.021	5.103	80.780	1.021	5.103	80.780	2.298	11.488	80.780
5	.962	4.811	85.591						
6	.757	3.787	89.378						
7	.499	2.493	91.871						
8	.406	2.030	93.901						
9	.362	1.811	95.711						
10	.206	1.030	96.741						
11	.184	.920	97.661						
12	.122	.612	98.273						
13	.112	.559	98.832						
14	.087	.434	99.266						
15	.069	.343	99.608						
16	.048	.238	99.846						
17	.015	.076	99.922						
18	.009	.044	99.966						
19	.007	.033	99.999						
20	.000	.001	100.000						

Rotated Component Matrix(a)

	Component			
	1	2	3	4
IPPORKLG	.927	.063	.004	-.115
IPMEATLG	.883	.145	.425	.027
CPIINDEX	.818	.374	.405	-.012
IPOULTLG	.804	.251	.510	-.044
CPITOMLG	.776	.270	.226	.018
IPCHESLG	.760	.209	.436	.065
PPDAIRLG	.722	.626	.120	.115
PPMILKLG	.710	.588	.171	.126
AGGWKHLG	.521	.361	.435	.335
CONSDNLG	.509	.155	-.095	.081
PPLTRYLG	.236	.839	-.109	-.085
PPIPRKLG	-.112	.743	.538	-.054
PPICHSLG	.566	.700	-.050	.063
PPMEATLG	.440	.695	.323	-.365
IPBTTRLG	.150	-.005	.792	-.140
IPDAIRLG	.435	.024	.637	-.479
IPSFDRLG	.328	.224	-.074	.849
AWKLHLG	-.150	-.255	-.417	.603
IPBEEFLG	.547	-.305	.179	.569
PPIBEFLG	.488	.469	.270	-.569

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
 a Rotation converged in 14 iterations.

APPENDIX D

NORMAL DISTRUBUTION CHECKS

One-Sample Kolmogorov-Smirnov Test

		Industrial Production	Default Risk	Term Structure	Expected Inflation	Unanticipated Inflation	OUTPUT	IPREST	PPIMEATS	OCF to Sales	Stocks Returns
N		48	48	48	48	48	48	48	48	48	48
Normal Parameters	Mean	102.716	1.647	6.077	0.088	0.002	0.034	0.0323	0.0314	0.187	0.050
(a, b)	Std. Dev.	11.835	0.449	0.851	0.015	0.060	1.020	1.000	1.141	0.024	0.093
Most Extreme	Absolute	0.203	0.209	0.059	0.079	0.160	0.235	0.130	0.145	0.186	0.075
Differences	Positive	0.107	0.209	0.043	0.079	0.160	0.112	0.130	0.145	0.105	0.075
	Negative	-0.203	-0.139	-0.059	-0.067	-0.103	-0.235	-0.075	-0.055	-0.186	-0.051
Kolmogorov-Smirnov Z		1.403	1.447	0.408	0.546	1.110	1.626	0.540	0.897	0.897	0.519
Asymp. Sig. (2-tailed)		0.039	0.030	0.996	0.926	0.170	0.010	0.932	0.396	0.396	0.950

a. Test distribution is Normal.

b. Calculated from data.

VITA

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Born on October 24, 1974 in Razgrad, Bulgaria
Married to Dr. Gulsevim K. Madanoglu

EDUCATION

Ph.D., Hospitality and Tourism Management	December 2005
Department of Hospitality and Tourism Management,	
Pamplin College of Business	
Virginia Polytechnic Institute and State University	Blacksburg, Virginia
M.S., Hospitality Administration	August 2001
Oklahoma State University	Stillwater, Oklahoma
B.S., Tourism and Hotel Administration	May 1998
Mersin University	Mersin, Turkey

TEACHING & RESEARCH EXPERIENCE

Instructor/Assistant Professor
Division of Resort & Hospitality Management   August 2005 to Present
College of Professional Studies, Florida Gulf Coast University   *Fort Myers, Florida*

Instructor
Department of Hospitality and Tourism Management   August 2002 to May 2005
Pamplin College of Business, Virginia Tech University   *Blacksburg, Virginia*

Research Assistant   January 2004 to May 2004
Department of Hospitality and Tourism Management
Pamplin College of Business, Virginia Tech University   Blacksburg, Virginia

Assistant Professor   August 2001 to May 2002
Department of Human Sciences
Stephen F. Austin State University   Nacogdoches, Texas

Research Assistant   January 2000 to May 2000
School of Hotel and Restaurant Administration
Oklahoma State University   Stillwater, Oklahoma

PROFESSIONAL EXPERIENCE

Shift Manager, Dining Services   July 2000 to June 2001
Scott Parker Wentz Dining
Oklahoma State University   Stillwater, Oklahoma

Senior Travel Counselor & Tour Sales Manager   May 1995 to August 1999
Cresta Tours & Travel Co.   Antalya, Turkey

Banquet Waiter   October 1994 to May 1995
Hilton Hotel Mersin (A five-star property)   Mersin, Turkey

Export Follow Up & Corporate Recreation Planner   May 1994 to October 1994
Rotopak Packaging, Inc.   Istanbul, Turkey

Sales Representative   March 1992 to October 1993
"Bazaar 12" Leather & Jewelry Tourist Stores   Istanbul, Turkey

Room Attendant & Bartender   May 1991 to October 1991
Ramada Hotel Istanbul (A five-star property)   Istanbul, Turkey

COMPUTER & LANGUAGE SKILLS

- **Property Management Systems**: Fidelio.
- **Point of Sale Systems**: Micros 3700, POSI Touch.
- **Distance Learning:** WEB CT, Blackboard, ANGEL..
- **Statistical Packages**: SPSS, SAS, MATLAB, LISREL
- **Languages:** Bulgarian, Turkish (Native), Russian (Fluent),
         French, German, Yugoslavian (Intermediate)

PROFESSIONAL MEMBERSHIPS

- Council on Hotel, Restaurant and Institutional Education (CHRIE)
- The Association of Hospitality Financial Management Educators (AHFME)
- American Finance Association (AFA)
- Financial Management Association (FMA) International

AWARDS & HONORS

- **Winner of the Outstanding Graduate Student Award (2005)** of Pamplin College of Business, Virginia Tech University.

- **Winner of Best Student Paper Award** - 2004 EUROCHRIE Conference, November 3-7, 2004, Ankara, Turkey.

- **Winner of Best Practice Paper Award -** LEAD SIG Symposium at the International – Council on Hotel, Restaurant and Institutional Education (CHRIE) Conference, August 6-9, 2002, Orlando, FL.

- **Finalist for Best Student Paper Award** - 2004 EUROCHRIE Conference, November 3-7, 2004, Ankara, Turkey.

- **Best Paper Nomination -** 2003 EUROCHRIE Conference, October 22-25, 2003, Bonn, Germany.

- **Full Conference Grant** – Ninth World Business Dialogue, April 3-5, 2003, Cologne, Germany. (Essay Title: Understanding Value Drivers in the Lodging Industry: A Key in Coping with Volatility).

- Departmental Nomination for **the Outstanding Graduate Teaching Assistant Award (2003)** of Virginia Tech University.

REFEREED JOURNAL ARTICLES

Madanoglu, M., & Olsen, M.D. (2005). Toward a Resolution of the Cost of Equity Conundrum in the Lodging Industry: A Conceptual Framework. International Journal of Hospitality Management, 24(4), 493-515.

Lee, K. & **Madanoglu, M.** (2005). Who Shook the Throne of BigMac?: A Strategic Analysis of Panera Bread Co. FIU Hospitality Review, 23(1), 28-38.

Madanoglu, M. (2004). Validating Restaurant Service Quality Dimensions. Journal of Food Service Business Research, 7(4), 127-147.

Olsen, M.D., **Madanoglu, M.**, Chung, Y., Graf, N., & Lee, K. (Accepted, In Press). Branding: Myth and Reality in the Hotel Industry. Journal of Retail and Leisure Property, 4(2), 146-163.

Madanoglu, M., Chang, D.Y., & Chu, Y. (2004). Value Creation in the U.S. Airline Industry: Are we Missing the Flight? International Journal of Contemporary Hospitality Management, 16(5), 294-298.

Madanoglu, M., & Martin, L.J. (2003). Recruiting International Students to U.S. Hospitality Graduate Programs: Students' Perceptions. Journal of Hospitality and Tourism Education, 15(4), 43-49.

Madanoglu, M., Moreo, P.J., & Leong, J.K. (2003). Employee Turnover among Room Attendants: Managers' Perspectives. Journal of Human Resources in Hospitality and Tourism, 2(1), 17-38.

MANUSCRIPTS UNDER REVIEW

Madanoglu, M., Lee, K., & Kwansa, F. A. Risk-Return Analysis of Casual Dining vs. Fast Food Restaurant Segments: Who Moved my Cheeseburger?

Madanoglu, M., Erdem, M., & Gursoy, D. (2004). Risk-Return and Cost of Equity of Small and Large Casual-Dining Restaurants.

APPLIED RESEARCH NOTE

Madanoglu, M. (2003). Contemporary Challenges of Bulgarian Tourism. e-Review of Tourism Research, 1(3), 64-67.

EDITORIAL REVIEWED PUBLICATIONS

Madanoglu, M. (2004, April). Spin-offs and Shareholder Value: Reflections from the Hotel Industry. EHLITE Magazine (Lausanne, Switzerland), 5, 46-47**.**

Madanoglu, M. (2003). Value Based Measures vs. GAAP: Are we closing the Gap? Hospitality Financial Management Review, 16(4), 2, 5-8.

Madanoglu, M. (2002). Understanding and Controlling the Value Drivers: A Key to Value Creation. Hospitality Financial Management Review, 16(1), 6-7.

REFEREED CONFERENCE PROCEEDINGS AND PRESENTATIONS

Madanoglu, M. , Karadag, I., Kwansa, F.A. (2005). Time for change? Going from Public to Private: Evidence from the Restaurant Industry. Paper presented at the *Seventeenth Annual Hospitality Financial Management Educators Symposium*, November 12, New York.

Madanoglu, M., & Graf, N. (2005). Degree of Franchising as a Risk and Performance Factor: Evidence from the Restaurant Industry. International Council on Hotel, Restaurant and Institutional Education Annual Conference, International Council on Hotel, Restaurant and Institutional Education , Las Vegas, NV, July 27-31.

Karadag, I.**, Madanoglu, M. (2005).** An Investigation of Potential and Existing Value of the Accounting Information for Marketing Managers in the Lodging Industry. International Council on Hotel, Restaurant and Institutional Education Annual Conference, International Council on Hotel, Restaurant and Institutional Education , Las Vegas , NV, July 27-31.

Madanoglu, M., & Yilmaz, Y. (2005). De-REITing and Shareholder Wealth Effects: The Case of Hotel Companies. In *Proceedings of the Tenth Conference on Graduate Education and Research in Hospitality and Tourism,* January 4-6, Myrtle Beach, SC.

Madanoglu, M., Olsen, M.D., & Kwansa, F.A. (2004). Empirical Investigation of the CAPM vs. Fama-French Model: Evidence from the Lodging Industry. Paper presented at the *Sixteenth Annual Hospitality Financial Management Educators Symposium*, November 13, New York.

Madanoglu, M., Erdem, M., & Gursoy, D. (2004). Risk-Return and Cost of Equity of Small and Large Casual-Dining Restaurants. *(Best Student Paper Award Winner).* In *Proceedings of the 2004 EUROCHRIE Conference*, November 3-7, Ankara, Turkey.

Karadag, I., & **Madanoglu, M.** (2004). The Use of Accounting Information and Property Management Structure: A Discriminatory Analysis Approach. *(Best Student Paper Award Finalist).* In *Proceedings of the 2004 EUROCHRIE Conference,* November 3-7, Ankara, Turkey.

Madanoglu, M., & Kwansa, F.A. (2004). Impact of Terrorist Bombings on Market Value of Hospitality and Tourism Enterprises: The Case of Indonesia, Spain, and Turkey. In *Proceedings of the 2004 EUROCHRIE Conference*, November 3-7, Ankara, Turkey.

Madanoglu, M. (2004). Utilization of Value Drivers as a Risk Management Tool: Reflections from the Tourism Industry. In *Proceedings of 2004 AMFORHT World Tourism Forum,* pp. 45-49, Antalya, Turkey.

Madanoglu, M., & Lee, K. (2004). Risk-Return Analysis of Casual Dining vs. Fast Food Restaurant Segments: Who Moved my Cheeseburger? In *Proceedings of the Ninth Conference on Graduate Education and Research in Hospitality and Tourism,* pp. 528-539, Houston, TX.

Wong, F., & **Madanoglu, M.** (2004). Shining Star in the Turbulent Skies: A Case of the Southwest Airlines. Poster presented at the *Ninth Conference on Graduate Education and Research in Hospitality and Tourism*, Houston, TX.

Madanoglu, M., & Olsen, M.D. (2003). The Concept of Risk in Finance and Strategy: Are we Arriving to the Crossroad? Paper presented at *the Fifteenth Annual Hospitality Financial Management Educators Symposium*, New York, NY.

Chang, D. Y., **Madanoglu, M.**, & Chu, Y. (2003). Toward E-Commerce in the Hospitality and Tourism Industry: An Exploratory Survey of Consumers' Perception *(Received Best Paper Nomination).* Paper presented at the EUROCHRIE Conference, Bonn, Germany.

Madanoglu, M., & Gursoy, D. (2003). Globalization Perspectives of Tourism and Hospitality Education in Europe: An Assessment of Bulgaria and Turkey. Poster presented at *the EUROCHRIE Conference*, Bonn, Germany.

Madanoglu, M., & Olsen, M.D. (2003). Cost of Equity Models in the Hospitality Industry: Review and Assessment. Poster presented at *the Annual International Council on Hotel, Restaurant and Institutional Education (CHRIE) Conference*, Palm Springs, CA. .

Madanoglu, M., Chang, D. Y., & Chu, Y. C. (2003). Value Creation in the U.S. Airline Industry. In *Proceedings of the First Asia Pacific CHRIE Conference*, pp. 269-274, Seoul, Korea.

Madanoglu, M., & Gursoy, D. (2003). Cross-Cultural Comparison of External Information Search for Accommodation Information: Travelers from European Union Member States. In *Proceedings of the Eighth Conference on Graduate Education and Research in Hospitality and Tourism*, pp.426-429, Las Vegas, NV.

Madanoglu, M., & Ekinci, Y. (2003). An Investigation of the Validity of the Self-Concept Theory Using Two Alternative Measurements. *In Proceedings of the Eighth Conference on Graduate Education and Research in Hospitality and Tourism,* pp. 430-432, Las Vegas, NV.

Madanoglu, M., Yoon, Y., & Saracino, M. (2003). Evaluation of Destination Attributes Influencing Travel Decisions: Travelers From Germany, France, Italy, and the United Kingdom. In *Proceedings of the Eighth Conference on Graduate Education and Research in Hospitality and Tourism*, pp.433-436, Las Vegas, NV.

Madanoglu, M. (2002). Best Practices in Grading Large Group Projects *(Best Practice Paper Award).* Paper presented at *the SIG LEAD Symposium – International – Council on Hotel, Restaurant and Institutional Education (CHRIE) Conference*, Orlando, FL.

Madanoglu, M., Leong, J.K., Moreo, P.J., & Warde, W.D. (2002). Reasons for Turnover in Oklahoma Lodging Properties. In *Proceedings of the Seventh Conference on Graduate Education and Research in Hospitality and Tourism*, pp. 428-430, Houston, TX.

Madanoglu, M., Chi, G., Craig, Z., Xu, Z. & Qu, H. (2002). A Study of Turnover among Room Attendants in North Central Oklahoma Lodging Industry. In *Proceedings of the Seventh Conference on Graduate Education and Research in Hospitality and Tourism*, pp.109-120, Houston, TX**.**

Madanoglu, M., & Martin, L. (2001). Marketing Hospitality Programs to International Graduate Hospitality Students. In *Proceedings of the Sixth Annual Graduate Education and Graduate Students Research Conference in Hospitality and Tourism*, pp.296-30, Atlanta, GA.

PEER-REVIEWED SYMPOSIA PRESENTATIONS

Lee, K., & **Madanoglu, M.** (2004). Delving into Food Novelty of the New Millennium: Hey BigMac Make some Room for Panera Bread! Presented at the International Council on Hotel, Restaurant and Institutional Education (CHRIE) Conference, Philadelphia, PA.

Madanoglu, M., & Olsen, M.D. (2003). Cost of Capital Issues in the Hospitality Industry. Presented at the International Council on Hotel, Restaurant and Institutional Education (CHRIE) Conference, Palm Springs, CA.

INVITED PRESENTATION

Madanoglu, M. (2001). Economy, Demographics and Characteristics of Personal Financial Planning in Bulgaria and Turkey. Fifth Annual Conference of Teachers in Economic Education, Nacogdoches, TX.

GRANTS AND PROFESSIONAL PROJECTS
- Unveiling Brand Conundrum - Project funded by the International Hotel Investment Council - London, England ($10, 000) – November, 2003 (Project Team Leader).
- Valuation of Best Western Hotel - Grand Island, Nebraska, USA - November 7, 2003 (Honorarium).
- Excel worksheet exercises for the Hospitality Financial Management (1st ed.) by R. Chatfield and M. Dalbor published by Prentice-Hall (2004). Project completed in January 2004 ($1,000).
- Book Review for John Wiley and Sons - Introduction to Hospitality Industry (8th ed.) by T. Powers and C.W. Barrows (Honorarium).
- Manuscript Review for Prentice Hall Publishing - Financial Management Chapter for the Introduction to Hospitality Industry. Manuscript Review for Prentice Hall Publishing (Honorarium).
- Book Review for Prentice Hall Publishing - Hospitality Financial Management (1st ed) by R. Chatfield and M. Dalbor (Honorarium).