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CONDITIONS ASSOCIATED WITH INCREASED RISK OF FRAUD: A MODEL FOR PUBLICLY TRADED RESTAURANT COMPANIES

Elizabeth Yost and Robertico Croes
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ABSTRACT. Many restaurant industry examples provide evidence that as a firm’s internal control structure weakens and deficiencies are found, the opportunity for fraud increases significantly. Thus, the central focus of this study is to understand the factors that contribute to increased risk of fraud to determine which conditions promote an increased risk of fraud for publicly traded restaurant companies. The main premise of the study tests the application of the fraud triangle framework constructs to publicly traded restaurant companies during the time period of 2002–2014, using proxy variables defined through literature. The proxy variables selected were company size, amount of debt, employee turnover, organizational structure, the Recession, inflation rate, interest rate, executive stock compensation, return on assets, and international sales growth. The study used a probit model, using the incidence of a reported internal control deficiency as the measurable dichotomous dependent variable.

INTRODUCTION

It is now known that millions of dollars were misappropriated during the reign of corrupt and deceptive business practices of corporations during the early 2000s. Enron and WorldCom caused publicly traded U.S. companies' losses upwards of US$7 trillion in market value as a result of the corporate fraudulent reporting scandals. The deceptive and corrupt business practices of these companies and others resulted largely from a failure of corporate governance and lack of ethical business practices, in which internal control mechanisms were circumvented by conflicts of interest that enriched executives and damaged shareholders (Free, Stein, & Macintosh, 2007). Many academic studies and industry examples provide evidence that as a firm’s internal control structure weakens and deficiencies are found, the opportunity to engage in fraudulent financial reporting increases significantly (Baker, 1998; Geller, 1991; Rezaee, 2005).

Further evidence of this problem notes that publicly traded companies today are under growing pressures from both passive and active investors to constantly increase their stock value in a competitive world where meeting performance goals are necessary to maintain a competitive edge (SEC, 2014). Because of these pressures, the current business environment may be one of increased susceptibility to fraud and abuse (Martinek, 2005). To meet targets, it is typical for companies to put additional stresses on their internal control structures by reducing head counts, requiring employees to perform more than one job, and rearranging risk profiles (Langevoort, 2006).

A weakened internal control structure is more susceptible to an increase in internal control deficiencies (COSO, 2000), which increased for public companies after initial compliance with the Sarbanes-Oxley Act (Ashbaugh-Skaife et al., 2006). In addition, as companies make changes to their business structures (e.g., get bigger or smaller from acquisitions or dispositions) and enter into complex accounting treatments and ventures, opportunities for deficiencies increase (Bryan &
Deficiencies are often observed through review of the main business cycles: revenue and receivables, purchasing and payables, treasury and stock, and financial reporting (Vallens & Cook, 2001). A deeper dive into this problem seeks to understand whether there are specific industries that may be more susceptible than others are to fraud and reported internal control deficiencies. Some research has been conducted in this area, and findings suggest that companies in the telecommunications, technology, financial, and services industries experience the most difficulty with Sarbanes-Oxley compliance efforts because of increased risk of fraud from industry and company risk factors (AICPA, 2009). The restaurant industry, a key player in the services industry, is particularly subject to increased fraud risk because executives and management control the key sources of revenue through operations, credit and market assessment (Boulton, 2013). For example, if executives and management have a business plan that promotes aggressive financial reporting, then fraud risk is increased. In addition, the restaurant industry comprises companies that operate as cash businesses with a large volume of transactions, are heavily dependent on supplier partner relationships, are incredibly competitive, and are sensitive to changes in macroeconomic conditions (Bernardi & Pincus, 1996). Each of these characteristics provides opportunities for increased fraud risk through related variables, which will be discussed subsequently in the literature review. In other words, the restaurant industry is often susceptible to deficiencies because of its inherent characteristics and high control risk (Rezaee, 2005). Examining the industry risk factors that may lead to fraud in the restaurant industry, specifically, through the occurrence of control deficiencies is a meaningful research problem.

Corporate scandals, misappropriation of assets and financial statement misstatement are all very real threats to the restaurant industry. According to the National Restaurant Association (NRA), fraud conditions amount to approximately 4% of industry sales, which is anywhere from $23 to $26 billion dollars (Garber & Walkup, 2004). Internal controls are often the first avenue of protection in safeguarding assets and thwarting and discovering errors and fraud (Arad & Jamshedy-Navid, 2010); however, if fraud is going to occur, research has shown that motivation and rationalization are key factors that contribute to fraud (Krippel, Henderson, Keene, Levi, & Converse, 2008). Therefore, pressure resulting from expectations of financial performance, opportunity to circumvent internal controls, and rationalization coupled with certain inherent industry factors may contribute to increased risk of fraud (Fikes, 2009).

Given that the restaurant industry is susceptible to increased fraud risk because its inherent general industry characteristics provide opportunities for unethical behavior and fraud, further examination and assessment of these characteristics is also warranted. As noted, opportunity to engage in unethical behavior may stem from the macro environment, the operational features, and the specific nature of the business cycles (Allen, 2008) in the restaurant industry. Thus, on the basis of both the general industry and operating characteristics and factors, the restaurant industry appears to be susceptible to increased risk of fraud. Because of this potential for fraud on the company, shareholders, and the public, examining the conditions that may prompt fraud is necessary for the efficiency of the restaurant industry, and namely, for those passive and active investors that are relying on the financial statements to be true and accurate (Kincaid, 2002; Rezaee, 2005). Ultimately, faith in an investment is what all investors seek, and history has shown that fraud can have a significant effect on financial investments. Quality of life and the standard of living are natural outcomes and goals of financial investments, and severe cases of fraud can derail both (Kincaid, 2002).

Therefore, the central focus of this study is to understand the factors that contribute to increased risk of fraud to determine why fraud may occur despite the imposed regulation of the Sarbanes-Oxley Act. The main premise of
the study tests the application of the fraud triangle framework constructs to publicly traded restaurant companies during the time period of 2002–2014, using proxy variables defined through literature. In essence, the study seeks to identify the factors that may provide the optimal criteria to engage in fraudulent or opportunistic behavior, using the incidence of a reported control deficiency as the measurable dependent variable.

THEORETICAL FOUNDATION/REVIEW OF THE LITERATURE

An explanation for why fraud occurs is embedded in the framework known as the “fraud triangle.” The fraud triangle is the model that explains the factors that may cause an individual or a company to commit occupational fraud. The framework was first proposed by Dr. Donald Cressey (1950) and consists of three constructs: pressure/motivation, opportunity, and rationalization. The three constructs offer an explanation as to why management commits fraud, and the dynamic relationship that underlies the acts of occupational fraud.

FRAUD TRIANGLE CONSTRUCT—PRESSURE/MOTIVATION

On the basis of an understanding and synthesis of literature presented as well as a review of SAS 99, it seems that pressure may best be classified into four general types that may lead to fraud: financial stability, external pressure, manager’s personal financial situations, and meeting financial targets (Skousen, Smith, & Wright, 2009). Financial stability refers to the pressure that managers face when financial stability and/or profitability are threatened by industry, economic, and company operating environments. External pressure refers largely to meeting external financing needs or obtaining financing needs in order to remain competitive. Supporting this pressure category, Efendi et al. (2007) found that intentional errors and misstatements are more probable for companies controlled by debt covenants, companies that issue new or debt equity capital, or companies that have a chief executive officer that also functions as the Chairman of the Board. For example, numerous researchers have found indication that executive stock option compensation provides encouragements for behavior that is fraudulent or corrupt (Burns & Kedia, 2006; Lie, 2005; Summers & Sweeney, 1998). This is because stock options drive up the share price and provide additional incentives for insider trading, a significant problem noted by Glass Lewis & Co (2006). Because personal financial problems depend on company financial performance, this fraud pressure becomes stronger. Last, meeting financial targets is evident as a pressure as manager’s performance is often tied to bonus payouts and salary increases (Summers & Sweeney, 1998).

The differing classifications and definitions of pressure provide evidence that the construct is not directly observable; therefore, researchers in this field have measured the construct of pressure through proxy variables (Skousen et al., 2009). For example, Lister (2007) and Skousen et al. (2009) measured personal, employment, and external pressure through proxies of rapid asset growth, increased need for cash, and the presence of debt financing. However, Persons (1995) found that the most substantial variables indicative of fraud were leverage, asset composition, and company size.

Expounding on Persons’ (1995) findings and relating these to the categories of pressures per SAS 99, proxies developed for financial stability included gross profit margin, sales and asset growth (Beasley, 2000; Beneish, 1997), which are often used as measures of company size. In addition, when considering measurements of external pressures relating to debt financing, the financial leverage ratio is the most common measurement of the amount of debt. When considering pressure relating to personal financial need, Dunn (2004) provided evidence relating executive stock ownership to their personal financial situations. If stock ownership is significant, personal finances are threatened. Therefore, a proxy for personal financial need is often defined in terms of ownership, or the
percentage of shares owned by management out of the total shares outstanding. Last, return on total assets (ROA) is a measure of operating performance widely used to indicate how efficiently assets have been used. ROA is frequently used as an assessment of managers’ performance and in determining bonuses. Therefore, ROA, or asset composition, is an appropriate proxy measurement for the pressure of meeting financial targets.

Regardless of the interpretations of pressure provided in literature, it is interesting to note that the conclusions about nonshareable problems and the way that they are resolved seems to relate specifically to individuals, and assumes that such individuals become trust violators in an organization when confronted with the pressures described. However, nonshareable problems could also motivate groups of individuals, representative of a company’s culture, to commit fraud. For example, Lister (2007) indicated that external pressures such as intense competition or not meeting analyst’s expectations may induce fraud committed by groups of individuals. Likewise, the aforementioned four main categories of pressure defined relate to both the individual and group of individuals in a company.

When examining some of these specific pressures through the lens of the restaurant industry, it is imperative to note that the industry as a whole underperformed during the Recession, making it susceptible to poor performance and increased pressure to meet analysts’ expectations (Rosner, 2003). In a study of Swedish restaurant companies, it is noted that competition is very high, often resulting in price wars among different companies that reduce prices and then try to compensate through increased sales (Alalehto, 2000). This environment is therefore dependent on the discretionary income of consumers, and this increased pressure may lead to earnings mismanagement through overstatement. In addition, restaurant companies are often ladled with heavy debt covenants as a result of construction and development loans as they build up locations (Sidel, 2007). Last, publicly traded restaurant companies heavily depend on investors who often offer discounted stock options to employees to promote increases in share price. As information about acquisitions and divestitures are revealed, insider trading may become a pressure and motivator for fraud (Hogan & Wilkins 2008).

Both pressures and opportunities are often determined by factors that occur at both the individual and company level (Carcello et al., 2006). However, without pressures that provide a motivation for fraud, opportunities to engage in fraud cease to become an issue. Therefore, according to the fraud triangle, it can be said that opportunity does not exist unless a pressure exists. The next section discusses the second construct of the fraud triangle: opportunity.

**FRAUD TRIANGLE CONSTRUCT: OPPORTUNITY**

*Opportunity* is described as an atmosphere or temporary environment that enables fraud to be committed, usually with a small perceived probability of being caught or reprimanded (Cressey, 1973; Jensen, 1993). Openings for opportunity exist for misconduct when firms have weak internal controls, a lack of policies and/or procedures, unauthorized or unsupervised access to assets (lack of segregation of duties), or a deficiency of management oversight and review (Bratton, 2002; Young, 2005). SAS 99 further confirms that the opportunity for fraud increases when certain risk factors exist for a company. Some risk factors include the susceptibility of the industry to market changes as well as the nature of the industry, coupled with the specific operations of the company such as whether there are significant or complex international operations; how effective management is at monitoring activities within the organization; and the level of complexity that exists in the organization (Albrecht et al., 2004).

The three aforementioned categories are measured by a certain proxy variable that has been defined in literature. For example, Summers and Sweeney (1998) and Albrecht (2002) noted that when a firm has a large
amount of international operations, the opportunity for fraud increases. The percentage of international sales is an appropriate measure of this opportunity, calculated by total international sales divided by total sales.

Unsound and intricate organizational structures may be demonstrated by increased turnover of executive management, board of directors, or legal counsel members. This is often measured by calculating the number of executives who left the company in the years before the fraud incidence. In addition, strong evidence has also linked the CEO position to fraud when the CEO is also the Chairman of the Board. In incidences like this, the CEO is the dominate decision maker for an organization that may provide an increased opportunity for fraud. Beasley (1996) noted that the longer the CEO holds the position of power, the greater the likelihood that he or she would be able to control the decisions of the board of directors.

The underlying reason for these three categories of increased opportunities for fraud is the state of the internal controls structure, and management’s commitment to strong corporate governance (Abbott et al., 2004). This is because corporate governance and internal controls set ethical expectations for employees. Loebbecke and Willingham (1988) surveyed audit firms that have had knowledge of incidences of financial statement fraud and found that weak internal controls and dominated management decisions that override internal controls are the leading circumstances that increase the probability of fraud occurrence. Weak corporate governance structures are often presented through ineffective monitoring of management. For example, Dechow et al. (1996) found that companies that manipulate performance are more probable to have a structure in which the CEO is also the Chairman of the Board as well as the founder of the company. Similarly, Farber (2005) found that companies who committed fraud had fewer financial experts on the board, fewer independent members, and a larger percentage of CEOs who hold the title of Chairman of the Board. This further contributes to the existing academic research that a weak corporate governance structure provides the greatest opportunity for fraud and supports the categories supported by SAS 99.

Public companies in the restaurant industry are susceptible to opportunities for fraud on the basis of the aforementioned opportunities. The nature of the industry is a cash business, making the business more susceptible to opportunities, and opportunities arise from a lack of internal controls. The ability to commit fraud in the restaurant industry results from inside knowledge of processes and procedures, and the ability to circumvent controls through weaknesses (Whitfield, 2013). In addition, corporate governance structures in the restaurant industry vary according to the sophistication of the organization and the attitudes of senior management. Thus, the attitudes or rationalizations are shaped where there are pressures and opportunities to commit fraud. The next section discusses the third construct in more detail.

FRAUD TRIANGLE CONSTRUCT: RATIONALIZATION

Rationalization is the third construct of the fraud triangle and is the most difficult to measure. Rationalization is essentially an attitude, belief, or position of the mind or ethical personality that enables an employee or group of employees of a company to intentionally misappropriate assets and then defend their dishonest activities (Cressey, 1973). Measuring rationalization is difficult; however, it has been done within the audit literature by defining it through the frameworks of borrowing and entitlement. A quantifiable means of capturing this could be through review of executive stock compensation measures. Often, an incidence of audit failure through reported internal control deficiencies is tied to executive stock compensation measures, indicating that fraud is more likely for companies that have high amounts of compensation for executives. In addition, Vermeer (2003) noted that management may often rationalize financial reporting methods through the creation and use of accrual entries. Therefore, excessive use of discretionary accruals may lead to poor audit opinions, providing a rationalized thought for business activities.
However, because it is difficult to ascertain root causes of accrual entries, this is not an appropriate measure of rationalization for determining increased risk of fraud. Management may or may not have a stake in reporting issues and most of the time the entries are made in response to uncontrollable business activities (Gray & Vogel, 2002).

Defining parameters for financial reporting can also have an effect on reducing the rationalized behavior and the opportunity to commit fraud (Hogan & Wilkins 2008). Nelson, Elliot, and Tarpley (2002) determined that the specifics of current standards of accounting deterred the rationalization of managers’ attempt to manage earnings. In addition, Gillett and Uddin (2005) found that the approach of the CFO toward financial reporting was a chief effect on an objective to misrepresent information. For restaurant companies, this means that rationalizations and attitudes can be managed by assessing the internal control environment and understanding the pressures and opportunities that exist for employees.

It is important to note that the elements of the fraud triangle have not been considered or applied comprehensively to the restaurant industry. As previously reviewed, some researchers have looked to the fraud triangle as a means to define certain pressures, opportunities, and rationalizations generally to corporate businesses, but not to hospitality businesses separately (Baker, 1998). The value in the application of the fraud triangle to the restaurant industry provides an opportunity to extend theoretical contributions that originated from mainstream accounting to hospitality literature, which is severely lacking in the current literature (Zimmerman, 2003).

The next section discusses industry characteristics and company variables that best explain pressures, opportunities, and rationalizations in the restaurant industry.

INDUSTRY CHARACTERISTICS AND INCREASED FRAUD RISK

On the basis of the previous discussion, past literature reveals general measurable variables that may contribute to increased fraud risk. In the context of specific industries, it is noted that many characteristics of the restaurant industry reveal similar variables found within the fraud triangle as described in the accounting and audit literature. For example, the nature of the restaurant industry is often described as a periodic, seasonal, and cyclic trade (Chathoth & Olsen, 2007; Choi, 2007; Parsa, Self, Njite, & King 2005), often susceptible to changes in political, social, and economic conditions, including inflation, unemployment, and rising interest rates. These conditions are related to the financial stability variables often found within the pressure construct of the fraud triangle. Because these conditions have an obvious effect on earnings and measures of success, this seasonal variability and volatility should be considered when analyzing pressures in the restaurant industry (Yap, 2008). In addition, the stringent requirements of the Sarbanes-Oxley Act in 2002 created reporting and monitoring of internal controls for the first time, resulting in increased amounts of reported internal control deficiencies (Ge & McVay, 2005).

Restaurants may respond negatively to the political, social, and economic pressures as evidenced by poor performance in profitability or growth and measured by changes in gross profit margin or asset size. Some restaurant industry pressures that may impact profitable sales growth include a lack of understanding of the consumer’s perception, including the relevance of existing brands, and delays in opening new restaurants. Likewise, an inability to consider cost pressures, including increasing fees for supplies, utilities, and health care providers contracted by restaurants, as well as an incapability of obtaining economies of scale in procurement, could compress margins and negatively impact sales and operations profit margin. Supporting these pressures, Ge and McVay (2005) discovered that firms with deficiencies in internal control are more multifarious, smaller and less gainful than those firms that have not disclosed deficiencies. On the basis of these findings, it can be stated that publicly traded restaurant companies with
diminished earnings (as measured by gross profit margin) over time are at an increased risk of fraud due to pressures resulting from financial instability inherent in the industry. Likewise, restaurant companies that are smaller (and therefore may not have strong internal controls) with increasingly complex transactions create additional opportunities for fraud to be committed (Levisohn, 2009).

When considering additional external pressures, it is clear that the success of publicly traded restaurant companies depends on their ability to obtain debt financing to grow, as well as the capability to pay down liabilities, manage debt, and obtain financing for future acquisitions (Advani, 2006). It is also noted that the world credit markets and the financial industry has experienced unparalleled mayhem, often described as obligatory insolvency, which has necessitated various levels of governmental intervention. These events can negatively affect the obtainability of credit already established, as well as the accessibility and the future cost of credit. Therefore, when debt financing exists, in order to address past and future obligations, and remain competitive, restaurant companies are at an increased risk of fraud especially when disruptions in financial and credit markets exist.

Studies have revealed that restaurant company victory and demise is eventually correlated to restaurant leadership abilities and intentions; therefore, it can be stated that executives and managers’ intentions are of utmost concern in understanding risk of fraud (Parsa et al., 2005). In addition, ineffective management may be connected to disappointing financial conditions, insufficient cash use and inadequacy in operations. When conditions that relate to a poor financial situation exist and are coupled with perceived opportunity and rationalization, the propensity for fraud increases greatly. For example, the pressure to manipulate earnings through stock ownership may occur when manager and executive salaries are tied to bonus potential. Insider trading and knowledge of proposed transactions may enable a manager to act in an unethical manner by selling or buying up additional shares of discounted stock (Burns & Kedia, 2006; Lie, 2005; Summers & Sweeney, 1998). A significant fluctuation in shares available may provide evidence of concern. In addition, feelings of failure may also motivate executives and managers to commit fraud. Researchers Haswell and Holmes (1989) conveyed that insufficient management, ineptitude, and greenness are constant themes in elucidating restaurant failures, coupled with a bad product, weak organizational culture, and poor marketing choices (Camillo et al., 2008). The pressure of failure may be too great for one to handle, leaving no other perceived option but to commit a fraudulent act.

It is also noted that the restaurant industry is extremely competitive with respect to pricing, level of service, locality, workforce, type/quality of food, with a plethora of well-established competitors. Growing competition in the industry is noted from a convergence of store, deli, and restaurant services, particularly in supermarkets that now offer “meals of convenience.” Echoing Lister (2007), competitiveness is a condition that makes meeting financial targets difficult and provides opportunity for fraudulent behavior. External pressure from analysts and investors may create an incentive to misappropriate assets, which, in turn, distorts common financial measures of success such as return on assets. Given that assets are balance sheet items carried year over year, a significant fluctuation over a relatively short amount of time could provide an indication of increased fraud risk (Ge & McVay, 2005).

It has been noted that the nature of the industry is a key opportunity that may result in an increased fraud risk. Doyle et al. (2007) demonstrated that industries made up of companies that are younger, undergoing capital restructuring, or growing rapidly are at an increased likelihood of reporting internal control deficiencies. Likewise, Ashbaugh-Skaife et al. (2006) discovered that firms with increasingly complex operations coupled with changes in organizational structure have less resources to put into internal controls and are therefore at an increased risk for accounting errors. The restaurant industry often comprises companies that are younger and undergoing restructuring,
while attempting to grow through both domestic and international franchisee partners. While a collective exercise in the restaurant industry is to generate sales and profit through international franchisee relationships, there is no guarantee that international operations will be gainful or that international growth will be continually successful. International growth is subject to risks such as international political and economic conditions, foreign currency fluctuations, and divergent cultures and consumer inclinations (Kim & Gu, 2006). As noted then, a large percentage of international sales could result in increased fraud opportunities.

In addition to these industry characteristics, it has been noted that the restaurant industry is one of high employee turnover (Allen, 2008) as a result of workforce diversity and the presence of many perceived low-skilled workers. In addition, as companies within the industry respond to declining performance, publicly traded restaurant companies may be subject to activist investors who wish to see a change in the executive management team. If a shake-up such as this would occur, the organizational structure of the company may become unstable, resulting in much greater opportunities for fraud to occur at all levels. As noted by Beasley (1996), further fraud incidences may occur if the CEO is also the Chairman of the Board, as this creates an opportunity for one person to control the tone of the company. These opportunities in the industry may be measured by benchmarking the turnover rate for each company and determining whether the CEO is also the Chairman of the Board.

Variables relating to rationalization are present in the restaurant industry when considering the motivations and attitudes of management. It is noted that in difficult times, such as the Recession, aggressive financial reporting tactics may be used (Ashbaugh-Skaife et al., 2006). Ultimately, the management team is responsible for the establishment and maintenance of financial reporting controls and reporting. As stated, when pressure and opportunities exist, rationalization becomes the final needed component for an increased risk of fraud to occur. Aggressive financial reporting tactics may be observed through executive compensation levels that are higher than average, and possibly through evidence of a change in auditor before the 5-year mandatory turnover (Ge & McVay, 2005).

It is noted from the aforementioned discussion that many internal and external variables provide measurements to the constructs of pressure, opportunity, and rationalization, which, when all present, increase the risk of occupational fraud. This study will focus on the variables most pertinent to the restaurant industry on the basis of the inherent characteristics of U.S. publicly traded restaurant companies, as previously described in this section. These variables have been explained and identified as company size, amount of debt, employee turnover, organizational structure, the Recession, inflation rate, interest rate, executive stock compensation, ROA, and international sales growth.

In addition, this study looks to assess the relation between the amount of debt a company has occurred and the incidence of reported internal control deficiencies. Empirical research notes that high amounts of debt create external pressures, thereby increasing the risk of fraud. In addition to debt financing, most publicly traded restaurant companies raise capital through equity financing and company stock programs. Restaurant companies are no exception, and frequently provide opportunities for management to buy up stock at a discounted price (Allen, 2008). Therefore, the presence of substantial stock compensation may provide incentives and rationalization for management to commit fraud, especially in periods of rough financial times. Thus, this study seeks to understand the effect of substantial stock compensation on increased fraud risk.

In addition, ROA may provide indicators of a company’s ability to meet financial targets. Therefore, this study also hypothesizes that poor ROA could increase the risk of fraud, as the pressure provides executive management with the motivation to manipulate earnings. Also, as most restaurant companies are expanding internationally, the percentage of
international sales may increase fraud risk as a result of lack of control over foreign operations or the ability to circumvent controls in attempts to promote the strategy as a successful operation. In addition, this study suggests that the organizational structure of the company may provide opportunity for increased fraud risk through a unitary tone at the top. Last, incidences of employee turnover in addition to macroeconomic factors and the Great Recession may all provide additional increased fraud risk for publicly traded restaurant companies. Each of the aforementioned variables provides a model that pertains to the central research problem and were selected on the basis of a review of the literature.

On the basis of the presented literature review, this study analysed the disclosures of publicly traded restaurant companies to determine whether a company has a higher probability of increased fraud risk on the basis of the presented variables.

**RESEARCH METHOD**

The research study adopted an exploratory research design using the case of publicly traded U.S. restaurant companies to provide a better understanding of the characteristics that may contribute to increased fraud risk.

This study intended to estimate the probability of increased risk of fraud as a result of deficiencies reported for publicly reported restaurant companies and controlling for specific industry and company characteristics or factors. The data comprise yearly time series data from 2004 to 2013, or a period of 10 years for 40 companies, across 12 variables, providing a complete data set of 4,800 data points. The dataset is therefore considered to be panel, also known as longitudinal or cross-sectional time series, and thus accounts for the individual heterogeneity of 40 publicly traded U.S. restaurant companies. As a panel data set, the data are strongly balanced, which means that each panel contains the same time points (Hamilton, 2012).

The description of each variable is summarized in Table 1. Per review of Table 1, it is noted that the majority of the variables are continuous in nature and are ratios. Company size is also continuous, but this variable is in millions of dollars instead of a percent. For purposes of analysis, this variable will be transformed to its logged function to ensure that the data meet the assumptions of the statistical tests of the probit model. Company size varies as a result of different company market capitalizations, and taking the logarithmic values will reduce wide-ranging quantities to smaller scopes, enabling better understanding of the data patterns (Oswald, 1997).

The other independent variables, recession and organizational structure, are categorical

<table>
<thead>
<tr>
<th>Variable</th>
<th>Symbol</th>
<th>Range</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deficiency</td>
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<td>0–1</td>
<td>0 = no deficiency noted</td>
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<tr>
<td>Company size</td>
<td>SZ</td>
<td>0–$344 billion</td>
<td>Continuous</td>
</tr>
<tr>
<td>Amount of debt</td>
<td>DEBT</td>
<td>0–100%</td>
<td>Continuous</td>
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<tr>
<td>Employee turnover</td>
<td>ET</td>
<td>0–100%</td>
<td>Continuous</td>
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<td>IR</td>
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<td>Unemployment rate</td>
<td>UR</td>
<td>0–100%</td>
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<tr>
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<td>IRT</td>
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<td>0 = not a recession year; 1 = recession year</td>
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<tr>
<td>Organizational structure</td>
<td>ORG</td>
<td>0–1</td>
<td>0 = CEO is not Chairman of the Board 1 = CEO is Chairman of the Board</td>
</tr>
<tr>
<td>International sales growth</td>
<td>INT</td>
<td>0–100%</td>
<td>Continuous</td>
</tr>
<tr>
<td>Stock Comp.</td>
<td>STOCK</td>
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<th>Variable</th>
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dummy variables and are coded as 0 or 1. As defined in the literature following the National Bureau of Economic Research, recession years of 2007–2009 are coded as 1, with the rest of the years coded as 0. Organizational structure is coded as 0 if the CEO is not also the Chairman of the Board, and 1 if the CEO is Chairman of the Board. Last, the inflation rate, interest rate, and unemployment rate are continuous variables and are provided at the current rates for each year in the time series.

The study assumed a binary distribution of the dependent variable, increased fraud risk, measured by the incidence of a reported internal control deficiency over the testable time period. This study complements Beneish’s methodological format for publicly traded restaurant companies and proposes a similar probit model to test the impact of the financial and nonfinancial variables on the incidence of reporting internal control deficiencies for publicly traded restaurant companies. Probit refers to “probability unit” and is an additional term that refers to the Z-score of a normal distribution. The probit model assumes that the probability of manipulation, or increased fraud risk, remains small at first, but then surges quickly, leveling off as the variables dip into a territory of red flags. This generates a sigmoidal or S-shaped line that is be represented by the aggregate normal (Tellis, 1986). Thus, for this study, the probit model estimates likelihood by regressing the binary dependent variable to the independent variables to determine characteristics which highlight increased fraud risk. Specifically, the study used this probit model to estimate the probability that an entity or company will be at an increased risk of fraud on the basis of the independent variables that support and are linked to the fraud triangle framework, as presented in the literature review. The study uses the probit model to estimate the relation between the independent variables and the dichotomous dependent variable (whether an internal control deficiency was reported in a given year).

This study proposes that the variables are created from the company’s financials and external factors according to the model to produce an M score to define the gradation in which the increased fraud risk may occur. The M score will be based on a combination of the 11 variables and weighted together according to the following formula:

\[
\text{Prob} \, F(Y) = \Phi(X\beta_1 + \ldots X\beta_{11} + \varepsilon) \quad (1)
\]

It is important to note that for the research problem at hand, the use of a probit model is necessary because of the assumption that there are latent variables that occur as part of the function. In a linear regression, Y would be observed directly. However, as noted, probits only show observations of 0 or 1, in this case, whether there is an increased risk of fraud. A probit model allows for the calculated likelihood of each Y through any given set of \( \beta \) coefficients, and the likelihood estimation determines the \( \beta \)s to maximize the likelihood of the given sample. The estimation step involves taking the logs of the sample likelihoods and solve for the probability.

Knowledge of the fundamentals of probit modeling, in conjunction with understanding Beneish’s assumptions, can assist analysts and executive managers in obtaining value for the restaurant industry, where the ability to forecast increased fraud risk ahead of the curve means the difference between profit and hefty fines or reputational losses. In addition, it is noted that much of finance and accounting research includes binary variables (i.e., the buy/sell decision is binary), so it is shocking that probit is not more extensively used. There are only a few examples of the use of the model in this area of research. For example, the Beneish method was used by students to predict manipulation of Enron’s financials 1 year before Enron’s bankruptcy.

**MEASUREMENT OF VARIABLES IN THE EQUATION**

On the basis of the aforementioned description of the research design, the following panel model is proposed to test the research
hypotheses:

\[
P(\text{Reported Deficiency} = 1 | X) = \text{Probit} \left( \beta_0 + \sum_{n=1}^{11} \beta_n x_n + e_t \right)
\]  

(2)

where \( P(\text{Reported Deficiency} = 1 | X) \) = the probability of a reported deficiency in the annual report given \( X \); \( X \) = a vector of all independent variables; Probit is used to symbolize the probit function form; and reported deficiency = 1 when a restaurant company has reported an internal control deficiency according to SOX requirements listed in the annual report for a given year.

- \( x_1 \) = company size = individual companies’ gross profit margin – the industry median profit margin, with the gross profit margin calculated as \((\text{total sales} - \text{cost of goods sold}) \) divided by total sales
- \( x_2 \) = debt leverage = Individual companies’ financial leverage ratio – the industry median leverage ratio for each year studied, with financial leverage ratio calculated as \( \text{average total debt divided by average total equity} \).
- \( x_3 \) = employee turnover = Individual companies’ turnover – the industry median turnover for each year studied, with turnover calculated as \( \text{the average separations during the year divided by the total number of employees} \).
- \( x_4 \) = inflation rate = current market rates for each year studied
- \( x_5 \) = unemployment rate = current market rates for each year studied
- \( x_6 \) = interest rate = current market rates for each year studied
- \( x_7 \) = recession year = 1 when the year of study is either 2007, 2008, or 2009
- \( x_8 \) = organizational structure = 1 when the individual company has a CEO who is also the Chairman of the Board, for each year studied.
- \( x_9 \) = international sales growth = Individual companies’ international sales growth rate – the industry median international sales growth rate for each year studied, with international sales rate calculated as \( \text{average international sales divided by total sales} \).
- \( x_{10} \) = executive stock compensation = Individual companies’ performance based stock compensation – the industry median stock compensation for each year studied, with stock compensation benchmarked to performance sensitivity measures.
- \( x_{11} \) = ROA = Individual companies’ ROA – the industry median ROA for each year studied, with ROA calculated as \( \text{average net income divided by total assets} \).

Each of these presented variables have been tested in past studies and are linked to common red flags of fraud; however, it is noted that none of these variables have ever been applied in a comprehensive fashion to the restaurant industry. Therefore, this model represents a major contribution to existing hospitality literature because it bridges mainstream audit and accounting theories to the restaurant industry. Whereas most research papers have looked to establish predictive measures for success for restaurant companies, there have been virtually no studies that have looked at characteristics of increased risk of fraud.

**RESEARCH FINDINGS**

After satisfying the assumptions and unit root tests, the overall final probit model is significant at \( p < .05 \); with a chi-square value of .0501. The chi-square value is used in analysis instead of the \( F \) statistic because of the previously determined selection of a random effects model (Baltagi, 2008). In addition, the model provides the intraclass correlation, rho, which indicates the percentage of variance that is due to differences across panels (companies). This value is .530191, which indicates that more than half of the variance (53%) is due to differences across (or between) panels (companies). This variance provides support for a future separation of the data into
subsegments according to type of restaurant company (e.g., fast casual, fine dining; Chathoth & Olsen, 2007).

LIKELIHOOD OF INCREASED FRAUD RISK

As noted in the overall model, the results reveal that the model as a whole is a significant fit to the data. Although the company-level variables were not significant in the overall model, external factors were each significant.

Specifically, the recession, interest rate, inflation rate, and unemployment rate all appear to have a significant effect on the increased risk of fraud as evidenced by an incidence of a reported internal control deficiency. It can be said that there is a significant relation between increased risk of fraud and the macroeconomic factors of interest, inflation, and unemployment rates. Using an application of marginal effects, it can be said that each additional change in interest rates yields an increase of about 29% in the likelihood of increased risk of fraud through a reported control deficiency. Likewise, it can be said that each additional change in inflation rates yields an increase of about 22.5% in the likelihood of increased risk of fraud through a reported control deficiency. Last, applying marginal effects, it can be said that each additional change in unemployment rates yields an increase of about 6.4% in the likelihood of increased risk of fraud through a reported control deficiency.

CONCLUSIONS AND IMPLICATIONS

The results of the applied probit model reveal for the entire population set of publicly traded restaurant companies that the macroeconomic factors of the Recession, interest rate, inflation rate and unemployment rate all have a significant impact on the increased risk of fraud, as evidenced through a reported internal control deficiency. These factors all impact demand by consumers for all types of restaurants, and are often noted as risk factors in management’s discussion and analysis (FASAB, 1999). Therefore, it can be said that the results of this study empirically support the intuition that changes in macroeconomic conditions may impact increased risk of fraud for companies in the restaurant industry. From a practical standpoint, these results may support the position that management may not have control over factors like macroeconomic conditions that, in turn, may increase the likelihood of fraud (Wang, 2012). The likelihood of increased risk of fraud is evidenced through the mathematical function that applies the probability values from the results of the model. Under these parameters, the probability of increased fraud risk ranges from 43 to 68%, depending on the macroeconomic variable, for the overall population of restaurant companies.

These results imply a couple of theoretical notions: first, that the fraud triangle is contextual when applied to the restaurant industry because only the variables that are

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Standard error</th>
<th>Z score</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Company size (natural log)</td>
<td>0.0480868</td>
<td>.0668365</td>
<td>0.72</td>
<td>.472</td>
</tr>
<tr>
<td>D. Debt</td>
<td>-0.3937673</td>
<td>.3058717</td>
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<td>.198</td>
</tr>
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<td>D. Employee turnover</td>
<td>-1.706809</td>
<td>1.18543</td>
<td>-1.44</td>
<td>.150</td>
</tr>
<tr>
<td>Recession</td>
<td>0.7711787</td>
<td>2540667</td>
<td>3.04</td>
<td>.002*</td>
</tr>
<tr>
<td>D. International sales growth</td>
<td>0.0287585</td>
<td>1.130567</td>
<td>0.03</td>
<td>.980</td>
</tr>
<tr>
<td>D. Stock compensation</td>
<td>-0.0179812</td>
<td>0.1873975</td>
<td>0.10</td>
<td>.924</td>
</tr>
<tr>
<td>D. Return on assets</td>
<td>1.211963</td>
<td>1.706828</td>
<td>0.71</td>
<td>.478</td>
</tr>
<tr>
<td>D. Interest rate</td>
<td>0.768265</td>
<td>21.67142</td>
<td>3.55</td>
<td>.000*</td>
</tr>
<tr>
<td>D. Inflation rate</td>
<td>-0.190374</td>
<td>9.441415</td>
<td>-2.11</td>
<td>.035*</td>
</tr>
<tr>
<td>D. Unemployment rate</td>
<td>0.25997</td>
<td>7.193341</td>
<td>3.61</td>
<td>.000*</td>
</tr>
<tr>
<td>Organizational structure</td>
<td>-.01462004</td>
<td>.1723243</td>
<td>-0.85</td>
<td>.396</td>
</tr>
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</table>

*Significant at p < .05 level.
outside of management's control were significant. In addition, from a managerial perspective, the study provides evidence that macroeconomic conditions that might affect consumer demand may increase the risk of fraud for publicly traded restaurant companies. The contribution of this study therefore supports part of Cressey's general framework as well as the AICPA's use of the fraud triangle to identify fraud red flags. Last, this study contributes to the effectiveness of the fraud triangle framework by supporting the framework through the identification of conditions that may lead to reported deficiencies. Future research could provide insight regarding why certain types of restaurants are more susceptible to various internal variables.

The main practical, managerial contribution of this study highlights the risk factors that the executive management of publicly traded restaurant companies should focus on in order to mitigate increased risk of fraud. First, from a practical standpoint, the effects of a Recession and fluctuating interest, inflation, and unemployment rates study contribute to the current body of literature regarding fraud and the effectiveness of the Sarbanes-Oxley Act on deterring fraud risk. By focusing on the changing macroeconomic conditions that may have an empirical effect on demand, executive leadership will be able to streamline processes to avoid incidences of reporting internal control deficiencies when exposed to the macroeconomic conditions. For example, revenue recognition processes should be scrutinized as a Recessionary time period is realized for the restaurant industry. This will ease the burden of reporting on internal controls and allow managers to focus on the most meaningful processes in order to reduce noted deficiencies.

The importance of this contribution is evident, when considering that the cost of complying with the Sarbanes-Oxley disclosure requirements is tremendous. Compliance with section 404 is arguably one of the most controversial areas of the Sarbanes-Oxley Act, largely due to the opinions that the costs of compliance far outweigh the benefits. For example, a study in 2005 estimated that Fortune 1000 firms expended an average of $5.9 million to comply with the internal control reporting requirements in their first year of compliance with section 404 of the Act (DeFranco & Lattin, 2006; Gupta & Nayar, 2006; Hammersley et al., 2008). Given the high costs of compliance, it is necessary to have a road map that will provide managers with the suggestion to focus on internal controls when faced with declining conditions as a result of changing macroeconomic conditions.

In addition to the high costs of compliance, it is also important to recognize additional managerial characteristics that may heighten the effects of the macroeconomic conditions on increased fraud risk. For example, it is well known in organizational behavior research that structure and processes shape how executive management is making sense of what is happening around them (Rubin, 1996). Never is this more important or evident than in times when the economy is in a Recession. As indicated by the results of the study, however, many times executive management does not recognize the problems associated with the macroeconomic conditions because of systematic perceptual filters that play the crucial role in the functioning of the company. For example, executive management only has available a certain amount of information to make decisions, and that information is often decentralized and therefore poses a challenge to coherent corporate decision making (Arrow, 1974). In the restaurant industry in particular, information is also not readily quantifiable, which makes it even more difficult to transform into meaningful and timely information for executive management. Particular examples include consumer insights and how well new promotions are received and moved throughout the market.

All of these managerial characteristics create a situation where management is not fully conscious of their bias towards optimism, which may also be shaped by corporate culture and the strong desire to appear to be in control of all areas of the business (Bainbridge, 1996). It is clear that companies operate in a complex
web of relationships with a lot of different stakeholders. This complex web, combined with the characteristics described, create a perfect managerial storm for increased risk of fraud. According to the model, the managerial factors are only exacerbated by the presence of macroeconomic factors.

For the first time, this study offers publicly traded restaurant companies with guidance towards a more thorough understanding of the specific conditions that might contribute to fraudulent behavior and increased risk of fraud. In addition, the identified conditions could help managers to improve internal control when a high risk factor is realized. The contribution of this study may allow restaurant companies to deter activities that may result in increased risk of fraud.

LIMITATIONS

First, it is important to recognize that the Sarbanes-Oxley Act was put in place to regulate publicly traded companies only. Therefore, for purposes of this study, privately traded companies are excluded. This is a limitation of the study because the results may indicate a problem that is more or less pervasive since the sample is representative of a small number of companies in the United States. For example, because private companies are not subject to the Act, their governance procedures may be lacking completely, providing evidence of fraud that is not regulated. In addition, the model is limited in application because it does not take into account fluctuations among the variables over time. Although the model compares data points to industry medians over time, the model is static in that it reports data at specific points in time but it does not calculate or account for the differences in the amounts between time periods. This could create a situation in which the changes in the variables are actually a result of the variables impacting each other instead of changing independently over time. Lagging the variables helps to remove these effects but the variables may still be exogenous when faced with changing financial conditions over time. Future research may address the changes in the variables over time and may therefore provide additional insight. Last, it should be noted that reported internal control deficiencies are indicative of increased fraud risk, but not necessarily conclusive that fraud has occurred. Therefore, just because a company has reported a deficiency, it does not indicate fraud, necessarily. The study therefore precludes the ability to conclude that fraud is always a result of an internal control deficiency.

Future Research

Because the study revealed that the macroeconomic conditions were significant for the entire population of restaurant companies, an area of future research might explore the relevance of the co-alignment model (Olsen & Roper, 1998) to strategic management decisions to reduce the risk of fraud. The co-alignment model has typically been utilized to make strategic management decisions for improving performance, based on the elements of environmental events, strategic choice, firm structure and firm performance (Olsen, West & Tse, 1998). By applying the co-alignment model to the identified variables, a new application for management to reduce instances of fraud might be revealed.

Although the evaluation of the entire population of restaurant companies did not provide significant results at the company level, an opportunity became apparent to further segregate the restaurant companies by restaurant segment to evaluate the effect of the variables within a smaller, similar group.

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