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# The impact of institutional ownership on firm performance in the hospitality industry

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# NOTE TO USERS

# THE IMPACT OF INSTITUTIONAL OWNERSHIP ON FIRM PERFORMANCE IN THE HOSPITALITY INDUSTRY

by

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1995

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A dissertation submitted in partial fulfillment
of the requirements for the

**Doctor of Philosophy Degree in Hotel Administration**
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INFORMATION TO USERS

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ABSTRACT

**The Impact of Institutional Ownership on Firm Performance in the Hospitality Industry**

by

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Institutional investors have become important players in today's financial markets and their increasing importance in corporate governance in the United States (U.S.) is further evidenced by the growing volume of corporate equity they control. The ownership structure/firm performance relationship has always been a subject of debate. Similarly, in the hospitality industry as of June 2002, institutional investors were estimated to own $2.3 billion, or 66.7% of total outstanding shares in PricewaterhouseCoopers' lodging universe.

This dissertation examines the impact of institutional ownership on firm performance as measured by a proxy for Tobin's $Q$ in the restaurant, casino and hotel sectors from 1999-2003. Given the endogeneity of institutional ownership in the restaurant and casino sectors, firm performance in these areas is significantly dependent upon the percentage of institutional ownership, and vice versa. In the hotel sector, however, there is no significant systematic relationship between institutional ownership and firm performance, when all other firm-specific variables controlled.

This dissertation contributes to the body of the hospitality finance literature, particularly in the area of corporate governance, by identifying significant relationships between institutional ownership and firm performance in the restaurant and casino sectors. In addition, this study reveals that investing institutionally in the restaurant and casino sectors may help hospitality industry investors mitigate the agency problem caused by the separation of management from ownership. This, in turn, will enhance the value of the firms in the capital market.

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# CHAPTER 1

## INTRODUCTION

Institutional investors have become important players in today's financial markets. Their increasing importance in corporate governance in the United States (U.S.) is further observed from the growing volume of corporate equity they control. As of 2003, institutional investors were estimated to control 60% of all outstanding equity in the U.S. (Hayashi, 2003), compared to 45% in 1990, 33% in 1980 and 8% in 1950 (Taylor, 1990). Accompanying the growing volume of institutional shareholdings in the equity market, the role of institutional investors has changed dramatically from that of simply passive investors to active monitors. Traditionally, institutional investors are not directly involved in corporate management decisions; instead, they simply follow the "Wall Street Rule" or an "exit policy" by selling their stakes when dissatisfied with the management or stock performance (Bathala, Moon, & Rao, 1994; Graves & Waddock, 1990). Further, they "window dress" their portfolios and exercise their power in terms of buying winners and selling losers in the market place to change the market's perception of the risk or success of the institution's trading strategy (Lang & McNichols, 1997). Because of their fragmented and transient ownership characteristics, institutions may trade off control for liquidity and thus act as passive investors (Bhide, 1993; Coffee, 1991; Rajgopal & Venkatachalam, 1997).

With increasingly significant ownership of equity in a firm, it has become less costly and yet more powerful for institutions to "voice" disagreement with the management instead of following an "exit policy" by liquidating significant holdings at substantial discounts and, therefore, depressing the firm's stock price (Coffee, 1991; Pound, 1992). Institutional investors, as opposed to non-institutional investors, are more likely to vote and engage in corporate management decisions due to their significant ownership of equity in the firms (Brickley, Lease & Smith, 1998) and attempt to influence top firm management to manage for the long-term interests of shareholders (Holderness & Sheehan, 1988; Hoskisson, Johnson & Moesel, 1994). In other words, institutional investors may have recently assumed a more effective monitoring role with collective capacity in the corporate governance arena. As a result, they may further influence corporate management decisions and possibly, firm performance (Black, 1992; Chaganti & Damanpour, 1991; Pound, 1991).

The observed increase in institutional ownership in the equity market has been attributed to the growth in pension funds (both public and private) and the passage of the Employee Retirement Income Security Act (ERISA) in 1974 (Graves & Waddock, 1990; Sherman, Beldona & Joshi, 1998). Public pension funds, such as the California Public Employees' Retirement System (CalPERS), are primarily defined benefit funds that provide retirement and health benefits to public employees (CalPERS, 2005). Public pension funds are governed by state regulations, and allowable investments made by fund administrators are prescribed by state legislation. State officials managing public pension funds are normally elected, and their compensation structures are generally not tied to fund performance. If a public pension fund does not perform well enough to cover the

fixed benefit payment to its beneficiaries under the defined benefit plan, the deficit comes from taxpayers. In addition, politically aspired public pension fund administrators may have a divergent orientation that is not in line with the best interests of either the fund beneficiaries or other shareholders in the firm (Romano, 1993; Woidtke, 2002). On the other hand, private pension funds include both defined contribution funds and defined benefit funds, and are governed by ERISA. In December 1985, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards No. 87 governing employers' accounting for pensions (FASB, 2004). ERISA and FASB No. 87 require annual re-evaluation of pension funds by comparing each fund's current assets and the present value of future pension obligations as specified in the defined benefit plan. The employer's contribution to the plan is reduced when the fund's current assets increase (Drucker, 1986; Graves, 1988; Graves & Waddock, 1990), and this is likely to put short-term financial performance pressure on institutions (Chaganti & Damanpour, 1991). Performance-based compensation structures for private pension fund administrators are also likely to offer incentives for fund administrators to pursue short-term gains instead of value maximization over a long-term horizon.

The short-term vision of private pension fund administrators is shared by mutual fund and investment bank managers who emphasize a high current return because of their own reward systems (Johnson & Greening, 1999). Empirical studies show that mutual fund managers tend to hold a firm's stock for less time than pension fund administrators (Gilson & Kraakman, 1991) and they may adjust the riskiness of their investment portfolio in an attempt to maximize their expected compensation, instead of shareholders' wealth or firm value (Brown, Harlow & Starks, 1996). Mutual fund and investment bank

managers are often evaluated on a quarterly basis and a bonus/penalty is determined based on fund performance relative to an index calculated quarterly (Starks, 1987). Given the pressure for short-term profitability coupled with the potential difficulty of disposing large blocks of shares without incurring a significant loss, mutual fund and investment bank managers are likely to vie for strategies and projects with a higher probability of short-term payoff and push firm management towards this orientation (Johnson & Greening, 1999). In addition, investors in mutual funds are entitled to liquidity and may retrieve their capital at the prevailing market price at any time (Sherman, Beldona & Joshi, 1998). This reinforces the short-term orientation of mutual fund managers.

Different types of institutional investors reveal different investment behaviors and pursue diverse objectives, subject to federal and state regulations, various clienteles, and other conditions and constraints. One thing they have in common, however, is that institutional investors have a fiduciary duty to their clients or beneficiaries, which requires them to act with loyalty and administer funds in a prudent manner (Association for Investment Management and Research "AIMR", 1999). In other words, institutional investors, whether they have a short-term or long-term orientation, must represent their clients or beneficiaries and maximize their interests in the firms they invest. Thus, these large firm shareholders can become effective monitors and may increase firm value accordingly (Agrawal & Knoeber, 1996; Black, 1992; Pound, 1991). Relationship investing, dictating that investing with the goal of influencing the management of the firm in which the investment is made (AIMR, 1999), can be key to a successful strategy for plan/firm value enhancement. Under ERISA, relationship investing is allowed by institutional investors if an investment strategy is consistent with the fiduciary duty to

enhance the value of the plan's investment in the firm, and hence, the enhancement of a firm's value (AIMR, 1999).

While investing in a firm, institutional investors essentially represent a group of individual investors with the collective capacity and power to "voice" disagreement with firm management and to vote on corporate management decisions. Here, an agency relationship is said to exist where firm managers act as the agent of institutional investors—the principal. Theoretically, in a principal—agent context, agents (managers) should act in the principals' (shareholders) best interests. In other words, firm managers have a fiduciary duty to maximize shareholder wealth and firm value. However, problems exist due to the separation of ownership and control in corporations (Berle & Means, 1932; Jensen & Meckling, 1976). Agency problems arise within a firm when firm managers pursue their own interests at the shareholders' expense or when the interests of the two parties are not aligned. Agency costs, stemming from these problems, incur while the principal pays to keep their agents from committing aberrant activities (Jensen & Meckling, 1976). Several mechanisms may mitigate agency problems, and one such instrument is concentrated shareholdings by institutions (Crutchley, Jensen, Jahera & Raymond, 1999). Institutional investors assume responsibility for managerial monitoring from a corporate governance perspective derived from their own fiduciary duty to clients or beneficiaries. They are believed to help improve firm performance accordingly (Agrawal & Knoeber, 1996; Black, 1992; Pound, 1991).

Since Berle & Means (1932) first commented on problems caused by the separation of ownership and control in corporations, the impact of ownership structure on firm performance has been a subject of debate. While a body of literature has been dedicated

to examining the relationship between the two, no consensus has been reached by previous researchers as to whether ownership structure (e.g., shareholdings by institutions, corporate management, blockholders, etc.) influences firm performance. Also, the extent and directions to which such influence, if any, is observed remain unclear (Agrawal & Knoeber, 1996; Chaganti & Damanpour, 1991; Clay, 2001; Craswell, Taylor, & Saywell, 1997; Han & Suk, 1998; Loderer & Martin, 1997; McConnell & Servaes, 1990; Woidtke, 2002). The ongoing debate is not dying down anytime soon as institutions have been playing a more important role and dominating the capital market in the U.S.

## Institutional Ownership in the Hospitality Industry

Publicly-traded firms in the hospitality industry, consisting mainly of restaurant, casino and hotel firms, have also become investment targets for institutional investors since the early 1990s. During the economic recession of 1990-1991, the hotel industry suffered from low occupancy rates with overbuilt room inventory in the late 1980s (Hotel & Motel Management, 1994). In late 1992, the hotel industry started to recuperate and it became profitable in 1993 (Block, 1998). Along with improved profitability and performance in the hotel industry, renovations on guest rooms, restaurants, meeting rooms, lobbies and other public spaces were initiated with available cash flow and, more importantly, with funding from the increased institutional investment in the hotel industry (Hotel & Motel Management, 1994). Observing the recovery and foreseeing the prosperous outlook of the hotel industry after the recession, institutional investors started to inject capital into the industry in an attempt not only to help enhance hotel profitability, but also to boost their own fund performance. Institutional investors' confidence in and

support to the hotel industry in terms of equity capital may have contributed to the improvement of the average occupancy rate from 61% to 66%, and the increase of the average daily rate from $59 to $79 during 1991-1998 (Gu & Gao, 2000).

As aforementioned, different types of institutions reveal different investment behaviors and pursue diverse objectives subject to various conditions and constraints. In the context of financing the development and growth of the lodging industry, the same theorem applies. Using the Delphi technique, Singh & Schmidgall (2000) surveyed 39 industry experts in 1998 and asked them to predict the probability (i.e., high, moderate, low probability, or not probable) of capital provided from various types of institutions to ten lodging segments—luxury, upscale, midscale, economy, budget, extended-stay, convention, casino, resort, and motel—in 2000 and 2005, respectively. Possibly due to their expected favorable performance outlook, luxury, upscale and convention hotels were predicted to be more likely financed by pension funds, life insurance companies, and investment banks. On the other hand, casino hotels were not considered a promising investment target for institutions in the 39 panelists' opinion. Casino hotels are expensive to build and the casino gaming market was considered saturated at that time, as evidenced by the Las Vegas Strip's less favorable profitability outlook (Singh & Schmidgall, 2000). That is, from the perspective of the 39 panelists in the study, institutional investors were in favor of the hotel segments that could bring better financial returns on the capital investment. This finding is consistent with the notion that institutional investors must administer their funds in a prudent manner to fulfill their fiduciary duty to their clients or beneficiaries.

As of June 2002, institutional investors were estimated to own $2.3 billion, or 66.7% of total outstanding shares in PricewaterhouseCoopers' lodging universe, which included 40 equities (Hotel & Motel Management, 2002). Out of the 40 equities, 26 were C corporations and the remaining 14 were hotel real estate investment trusts (hotel REITs). The dominance of institutional investors observed in the lodging industry seems parallel to that of the U.S. equity market as a whole. Previous research examined the relationship between institutional ownership and firm performance in the manufacturing sector; this study will examine that relationship in the hospitality industry.

## Research Questions

The financial goal of a firm is to maximize its value or shareholder wealth (Keown, Martin, Petty & Scott, 2003). Given their fiduciary duty, institutional investors may pick hospitality firms as part of their investment portfolio and act as large shareholders in an attempt to enhance their fund performance and their clients' or beneficiaries' wealth. In other words, hospitality firm performance, which reflects fund performance to some extent, may be of critical concern to institutional investors and their clients or beneficiaries.

Given the significant institutional ownership in the lodging industry (Hotel & Motel Management, 2002), and possibly in other sectors of the hospitality industry, the first question is whether some of the empirical evidence on the relationship between institutional ownership and firm performance observed in other industries exists in hospitality as well. That is, will the percentage levels of institutional shareholdings of total outstanding shares in hospitality firms affect their performance? Or, will

institutional investors help enhance firm performance through their presence and concentrated shareholdings in the firms? The hospitality industry possesses different characteristics and features different business and financial risks than other industries; and this may have influenced institutional investors' behaviors and decisions in corporate governance. Furthermore, market capitalization of hospitality firms is generally much lower than that of manufacturing firms. Institutions may be able to exert their collective power more freely in hospitality firms. Therefore, a significant relationship between institutional ownership and hospitality firm performance may be reasonably expected.

After looking at the restaurant, casino and hotel sectors in detail, will any significant relationship exist between institutional ownership and firm performance in each? When institutional investors make decisions about holding hospitality firm stocks, characteristics such as capital structure, profitability, riskiness or dividend policy specific to the three sectors may play an important role. This may lead to different institutional ownership/firm performance relationship patterns in the three sectors. As far as capital structure is concerned, the restaurant industry is generally characterized by light debt-usage, or low financial leverage, as evidenced by an average total debt to equity ratio of 0.52 for restaurants for the quarter ending December 31, 2004, compared to 2.09 for the casino industry and 1.18 for the hotel industry, respectively (Reuters, 2005). The relatively lower debt-usage of the restaurant industry may attract institutional investors who prefer industries with low debt burden to reduce the risk associated with insolvency. On the other hand, the higher debt to equity ratio in the casino and hotel industries may lure institutions who tend to vote on riskier projects with higher return potential. For, if

these projects are successful, they can pay off the debt holder at the contracted rate and capture a residual gain.

## Justifications

Since Berle and Means (1932) first commented on problems caused by the separation of corporate ownership and control, a body of literature has been dedicated to examining the relationship between ownership structure (e.g., shareholdings by institutions, managers, or blockholders) and firm performance mainly in the manufacturing industries. Yet few scholars have studied how ownership structure may have influenced firm performance in the hospitality industry. To my best knowledge, only the impact of managerial ownership on firm performance has been examined for the restaurant industry (Gu & Kim, 2001) and for the hotel industry (Gu & Qian, 1999). However, no other studies have been documented on the relationship between institutional ownership and firm performance for any sectors of the hospitality industry, despite the tremendous growth of institutional ownership in the equity market in recent years and the significant institutional ownership in the lodging industry (Hotel & Motel Management, 2002). This study attempts to investigate the impact of institutional ownership on firm performance in three sectors (i.e., restaurant, casino and hotel) of the hospitality industry by testing the relationship between the two while controlling for the effect of other firm specific variables.

Investors in the hospitality industry, like hospitality customers and operators, are important stakeholders. Firm performance, in terms of stock prices and other relevant measures (e.g., Tobin's $Q$), is of critical importance to the investors' vested interest in

hospitality firms and therefore affects their desire to invest in the industry. From a hospitality firm management perspective, recognizing possible influence from institutional investors on firm performance may help direct the firm towards value maximization that is in the shareholders' best interests.

The findings of this study could contribute to the body of hospitality finance knowledge, particularly in the area of corporate governance, by providing empirical evidence from several important service sectors. The study identifies a significant relationship between institutional ownership and firm performance in two of the three major sectors of the hospitality industry. In addition, it reveals that investing institutionally in the restaurant and casino sectors may help hospitality industry investors mitigate the agency problem caused by the separation of management from ownership, thus enhancing the value of the firms in the capital market.

## Delimitations

This study is limited to hospitality firms identified through their individual North American Industry Classification System (NAICS) code numbers and those with available accounting, financial and institutional ownership information between 1999-2003. In particular, not all firms in the investment portfolio of institutional investors during 1999-2003 were included in this study because of securities reporting regulations set forth by the U.S. Securities and Exchange Commission (SEC). Institutional investment managers are only required to report their shareholdings on Form 13F to the SEC if they exercise investment discretion of $100 million or more, in fair market value, in Section 13(f) securities (U.S. Securities and Exchange Commission, 2004). That is,

shareholdings in hospitality firms by institutional investment managers whose portfolios had less than $100 million fair market value were not reported to the SEC by those institutions during 1999-2003, and were excluded from this study.

Further, this study employs a proxy for Tobin's *Q* as a measure of firm performance. Although Tobin's *Q* is the most commonly-used firm performance measure when modeling the relationship between ownership structure and firm performance in previous studies (Cho, 1998; Craswell et al., 1997; Demsetz & Villalonga, 2001; Hermalin & Weisbach, 1991; Himmelberg, Hubbard, & Palia, 1999; Holderness, Kroszner, Sheehan, 1999; Loderer & Martin, 1997; McConnell & Servaes, 1990; Morck, Shleifer, & Vishny, 1988), possible distortions in Tobin's *Q* in measuring intangible assets and replacement costs of total assets could present a problem. Although other firm performance measures such as stock return and accounting return also exist, a proxy for Tobin's *Q*, which is also widely used in previous studies (Clay 2001; Gompers, Ishii & Metrick, 2003; Kaplan & Zingales, 1997), was used as a measure of firm performance in this study. This proxy measure is known as the book value of total assets plus the market value of equity minus the sum of the book value of common equity and deferred taxes, all divided by the book value of total assets.

## Definitions

1. BETA. This is a symbol representing the systematic risk of a firm's stock or the undiversifiable portion of the investment risk inherent in stock ownership

2. DEBT. This is a symbol measuring financial leverage of a firm. It is calculated as the ratio of total debt to total assets.

3. DIV. This is a symbol representing dividend payout ratio. The ratio is calculated as dividends divided by income before extraordinary items adjusted for common stock equivalents (COMPUSTAT, 2003)

4. Endogeneity. A term used to describe the presence of an endogenous explanatory variable in this study.

5. Endogenous Variables. In simultaneous equations models, variables that are determined by the equations in the system or that are determined from within the system.

6. Exogenous Variables. Variables that are determined outside the model of interest and that are uncorrelated with the error term in the model.

7. FIX. This is a symbol measuring expenditures on fixed plant and equipment, or capital expenditures, as a fraction of sales revenues.

8. Institutional Investors. Entity or organizations with large amounts of capital to invest, including pension funds, mutual funds, investment companies, insurance companies, and endowment funds, and to exercise discretion over the investments of others.

9. Instrumental Variables (IV). In an equation with an endogenous explanatory variable, an instrumental variable is a variable that is uncorrelated with the error term in the equation, that does not appear in the equation, and that is partially correlated with the endogenous explanatory variable (Wooldridge, 2003).

10. North American Industry Classification System (NAICS). A classification system that has replaced the U.S. Standard Industrial Classification (SIC) system and was developed jointly by the U.S., Canada and Mexico.

11. Ordinary Least Squares (OLS). A method of estimating the parameters of a multiple linear regression model by minimizing the sum of squared residuals (Wooldridge, 2003).

12. Proxy *Q*. A proxy that approximates Tobin's *Q*; calculated as the book value of total assets plus the market value of common equity minus the sum of the book value of common equity and deferred taxes, all divided by the book value of total assets.

13. ROA. This is a symbol measuring firm profitability ratio. This ratio is defined as net income divided by total assets.

14. Shareholder Activism. Active monitoring of the management of firms rather than efficient portfolio selection without an active role in monitoring (Rajgopal & Venkatachalam, 1997). Also known as relationship investing.

15. Simultaneous Equations Model (SEM). A model consisting of two or more jointly-determined endogenous variables, where each endogenous variable can be expressed as a function of other endogenous variables and of exogenous variables (Wooldridge, 2003).

16. SIZE. This is a symbol measuring firm size. It is calculated as logarithm of total assets.

17. Two-stage Least Squares (2SLS). A regression technique that uses instrumental variables that are uncorrelated with the error terms to compute fitted values of the problematic predictor(s) in the first stage, and then uses the fitted values to estimate a linear regression model of the dependent variable in the second stage (SPSS 11.0 Help File).

18. Tobin's *Q*. A frequently used firm performance measure; defined as the ratio of the year-end total market value of the firm to the estimated replacement costs of its assets.

## Summary

The phenomenal growth of institutional ownership in the equity market in the U.S. was discussed, and major types of institutional investors were introduced. The need for an examination of the relationship between institutional ownership and hospitality firm performance was justified. The research questions were devised accordingly. Also, the terms that are used throughout this dissertation were defined. Next, a review of related literature follows in Chapter Two.

# CHAPTER 2

## REVIEW OF RELATED LITERATURE

This chapter reviews related literature on the relationship between institutional ownership and firm performance. The first section discusses the myopic institutions theory and is followed by a review of the role of institutions as monitoring agents in the second section. Further in the second section, institutional monitoring is reviewed in the agency framework, and institutional shareholder activism and the free rider problem are presented. State restrictions on institutional ownership in casino firms are introduced in the third section. Previous empirical studies on the relationship between institutional ownership and firm performance in other industries are reviewed in the fourth section. This chapter then concludes with a summary section.

### The Myopic Institutions Theory

Graves & Waddock (1994) argued that the increase in the level of institutional ownership has been associated with a decline in the competitiveness and financial performance of U.S. firms. This is partially due to institutional investors' need to show improved results on their funds frequently, and they pursue short-term performance because they are rewarded based on quarterly results (Graves & Waddock, 1994; Hansen & Hill, 1991; Starks, 1987). A survey of 400 U.S. chief executives in 1987 revealed

institutional investors as one of the greatest sources of pressure on corporations to achieve short-term performance (Nussbaum & Dobrzynski, 1987). As a result, top firm management is often accused of not managing the firm for the long-term due to short-term performance pressure from institutional investors, or being non-responsive to diverse stakeholders such as communities, employees and the environment that could possibly help enhance firm performance in the long run (Johnson & Greening, 1999).

The short-term vision of institutional investors has been associated with the myopic institutions theory. It posits that institutional fund managers are under pressure from their superiors for short-term performance and they make their "buy" or "sell" decisions in response to organizational pressures and factors affecting their job security and advancement (Graves, 1988; Hansen & Hill, 1991; Hill, Hitt & Hoskisson, 1988; Loescher, 1984). That is, it is safer for institutional fund managers to simply dispose of shares of poorly-performing firms and buy better-performing ones than to incur monitoring costs to influence firm decisions and run the risk of further deterioration of fund performance by the declining stocks (Hansen & Hill, 1991). Institutional investors are viewed as not willing to invest their "time" in poorly-performing firms, and they may not be willing to vote on projects that have a longer payback period, either. For a sample of 22 computer manufacturing firms between 1976 and 1985, Graves (1988) provided empirical evidence that a negative relationship exists between the level of institutional ownership and research & development (R&D) expenditures. Explicitly, institutional investors were found not to be committed to R&D, which served as a proxy for internal long-term investment in the study.

Although the myopic institutions theory is supported by theoretical and empirical foundations as stated above, some researchers (Bushee, 1998; Hansen & Hill, 1991; Karake, 1996; Rajgopal & Venkatachalam, 1997) offered opposite evidence and challenged the theory. When studying four technology-driven industries including pharmaceutical, chemical, computer and aerospace between 1977-1987, Hansen & Hill (1991) did not find institutional ownership and R&D intensity negatively-related. Rather, they found a significant and positive relationship between institutional ownership and R&D intensity, which discredits the myopic institutions theory. R&D intensity in their study represented R&D expenditures as a percentage of total sales.

Additional evidence opposing the myopic institutions theory was presented by Karake (1996) who examined the relationship between institutional ownership and information technology investment/performance. Using relative information technology index (RITI) as a proxy for mid to long-term firm investment commitment, Karake (1996) surveyed 305 information technology executives in the U.S. and found a positive relationship between the level of institutional ownership and the company's RITI. In other words, despite the possibility of short-term earnings depression and volatility, institutional investors do value companies with long-term investments in information technology.

Firm managers may become myopic to some extent if the myopic institutions theory is to hold. Fearing myopic institutions' selling large blocks of firm shares that may depress share price, firm managers may become myopic in artificially inflating current earnings. Proposing a probit model relating the sign of discretionary accruals (i.e., income increasing or decreasing) to the level of institutional ownership with 5,707 firm/year observations between 1989-1995, Rajgopal & Venkatachalam (1997) found

neither the percentage of institutional ownership nor the number of institutional investors systematically correlated to the type of accrual manipulation. That is, the extent of institutional ownership does not motivate firm managers to engage in income increasing accounting accruals. So, institutional investors were not myopic in pressuring firm managers for short-term performance in their study.

As opposed to Rajgopal & Venkatachalam's (1997) study using a lower-cost form of earnings management of discretionary accruals, Bushee (1998) examined R&D cuts, representing a more costly form of earnings management, as related to the level of institutional ownership. Proposing a logit model that predicts the probability of R&D cuts from the percentage of institutional ownership and a set of control variables, Bushee (1998) found that when institutional ownership is high, firm managers are less likely to cut R&D expenditures to reverse an earnings decline. In other words, the presence of institutional investors ensures that managers choose R&D levels that maximize firm value for the long-run instead of meeting short-term earnings goals.

Thus, it is apparent that not all institutional investors are myopic as theorized. Contrary to the myopic institutions theory, more plausible evidence on the long-term orientation of institutional investors provides theoretical support that hospitality firm performance may be influenced through concentrated shareholdings by institutional investors in a positive way.

### Institutions as Monitoring Agents

Institutional investors, in view of their significant shareholdings, have more incentive to monitor firm managers from committing aberrant activities and opportunistic behavior

(Bathala et al., 1994; Shleifer & Vishny, 1986). Institutions can influence corporate management decisions by taking an active monitoring role in the decision making process rather than selling their shareholdings when dissatisfied with firm management. The benefits that large shareholders obtain from their monitoring efforts are more likely to exceed the costs that they bear (Grossman & Hart, 1990; Huddart, 1993; Shleifer & Vishny, 1986). Moreover, large ownership positions, along with greater collective capacity and power, allow institutions to exert greater influence on corporate management decisions. Possible actions taken by institutions include pressuring firm management for a variety of reforms, replacing firm management team, voting on corporate management decisions and policies, and structuring executive compensation plans (Melcher & Oster, 1993; Monks & Minow, 1995). The role that institutions play as monitoring agents will be discussed next by reviewing institutional monitoring in the agency framework, institutional shareholder activism, and the free rider problem.

## Institutional Monitoring in the Agency Framework

Agency theory hypothesizes that because people are self-interested in the end, they will have conflicts of interests on certain issues when they attempt to engage in cooperative endeavors (Jensen, 1998). The modern corporation is subject to agency conflicts arising from the decision-making and risk-bearing functions of the firm. Losses derived from such conflicts and to the parties involved are termed agency costs (Jensen & Meckling, 1976). One source of agency costs is excessive perquisite consumption by firm managers. Managers have a tendency to consume excessive perks and engage in other opportunistic behavior because they receive the full benefit of such activity but bear less than the full share of the costs. Jensen & Meckling (1976) further define agency costs as

the sum of the monitoring expenditures by the principal, the bonding expenditures by the agent and, lastly, the residual loss of the principal. While managerial ownership and debt leverage are two possible mechanisms to mitigate agency problems between shareholders and management, and reduce agency costs leading to firm value enhancement (Grossman & Hart, 1982; Harris & Raviv, 1991; Jensen, 1986; McConnell & Servaes, 1990; Morck et al., 1988), institutional ownership serves as an alternative monitoring mechanism of firm value enhancement in the agency framework (Bathala et al., 1994).

Using the two-stage least squares (2SLS) technique in a simultaneous equations framework, Bathala et al. (1994) examined 516 firms listed on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) and the over-the-counter (OTC) market in 1988 and found that institutional ownership is negatively related to both debt ratio and managerial ownership. Firms with high debt leverage may incur higher agency costs of debt inherent in strict debt covenants that lower the default risk of creditors (Grossman & Hart, 1982). The existence of institutional investors reduces the need of using debt leverage to control agency conflicts between firm managers and shareholders, although a second type of agency conflict between institutional investors and creditors may exist (Keown et al., 2003). Additional monitoring provided by institutional investors also creates less need to utilize managerial ownership to control agency costs. Institutional investors serve as effective monitoring agents and help in reducing agency costs. These conclusions were supported by Crutchley et al. (1999).

Crutchley et al. (1999) argued that managers internally choose the level of dividend payout, debt leverage and insider ownership as mechanisms to reduce agency costs. They hypothesize that institutional ownership serves as an external monitoring mechanism that

can help reduce agency costs as well. Crutchley et al. (1999) examined 812 cross-sectional NYSE/AMEX firms in 1987 and 1993 using the three-stage least squares (3SLS) technique in a simultaneous equations system. They found a negative relationship between institutional ownership and the three internally-chosen mechanisms in the sample firms in 1993. Their study suggested that managers view the outside institutional monitoring as a substitute for the three internal monitoring mechanisms and argued the efficient monitoring role of institutional investors. Although their 1987 sample did not yield significant evidence of institutional monitoring as a substitute for other monitoring mechanisms, the noteworthy results of their 1993 sample documented the growth and increasing importance of institutional investors as monitoring agents in the agency framework.

In an attempt to classify institutional investors as active monitors of firm managers or simply passive voters in the case of antitakeover charter amendments (ATCA), Agrawal & Mandelker (1990) investigated the relationship between institutional ownership and the changes in stock prices around the announcements of ATCA using a sample of 349 NYSE/AMEX firms between 1979-1985. When ATCAs are proposed by firm managers to block hostile takeover attempts, the monitoring role of large shareholders and institutional investors, in particular, is of critical importance because ATCAs are subject to shareholders' approval and could result in either a positive or negative wealth. Agrawal & Mandelker's (1990) findings suggest that when institutional ownership is large, the stock market reaction to ATCA proposals is more favorable. This is consistent with the active monitoring hypothesis on the role of institutional investors. Other studies (Brickley et al., 1988; Jarrell & Poulsen, 1987) also provide similar conclusions on the

active monitoring role of institutional investors in the case of ATCA. Brickley et al. (1988) found that when firm managers propose ATCAs that are harmful to the shareholders, a positive relationship exists between institutional ownership and the proportion of shareholders voting against the proposals. Jarrell & Poulsen (1987) reported that firms proposing detrimental ATCAs have lower institutional ownership.

Thus, the active monitoring role played by institutional investors in the agency framework not only mitigates agency conflicts between shareholders and management, and agency costs, but also may help increase shareholder wealth and enhance firm value in the long run.

## Institutional Shareholder Activism

The SEC's Shareholder Proposal Rule 14a-8 provides an opportunity for a shareholder, even one owning a relatively small amount of a firm's securities, to submit issues for inclusion in the firm's proxy material and for presentation to a vote at an annual meeting (U.S. Securities and Exchange Commission, 2004). The rule allows shareholders to pursue their agendas regarding corporate governance and corporate performance through a formal mechanism. Beginning in the mid 1980s, some public pension funds developed reputations as shareholder activists. From 1987-1994, public pension funds sponsored 463 proxy proposals seeking changes in corporations' governance (Gillan & Starks, 2000). Three main factors led to the emerging role of institutional shareholder activists. Firstly, institutional investors find it difficult to dispose of their substantial shareholdings without taking a significant discount when dissatisfied with firm management or firm performance. Secondly, a large portion of institutional investors' portfolio that is indexed precludes them from share churning. The low turnover

of public pension funds reflects their levels of indexing. CalPERS has about 10% annual turnover in its total equity holdings while the New York State and Local Retirement System has around 7% (Gillan & Starks, 2000). Lastly, changes in proxy rules in 1992 relaxed rigorous restrictions and have made communication and coordination among institutional shareholders easier, and, therefore, lowered the cost of monitoring efforts (Admati, Pfleiderer & Zechner, 1994). More difficulties in selling without recognizing a huge loss, less flexibility in turning over shareholdings and less rigorous regulations motivate public pension funds for shareholder activism and monitoring. As a result, organizations such as Institutional Shareholders Services, Inc. (ISS) and The Council of Institutional Investors (CII) were established and engage in aligning institutional investors and providing proxy voting and corporate governance services.

Private pension funds and mutual funds, on the other hand, also engage in shareholder activism. In a survey of 231 portfolio managers, 77% of the respondents indicated that they had participated in some sort of shareholder activism in the previous year, either by communicating directly with the board of directors, sponsoring a shareholder resolution or voting on shareholder proposals (Felton, 1997).

Many empirical studies on the relationship between institutional shareholder activism and firm performance have led to mixed conclusions (Del Guercio & Hawkins, 1999; Karpoff, Malatesta & Walkling, 1996; Martin, Kensinger & Gillan, 1996; Opler & Sokobin, 1997; Smith, 1996; Wahal, 1996). Advocates of institutional shareholder activism argue that targeting firms requires closer monitoring of firm management that is beneficial to all shareholders of the firm. Further, shareholder activists focus on the long-term development of the firms and can possibly help enhance firm performance as a

result (Gillan & Starks, 2000). Examining 117 firms that had poor share price performance during four years before being listed on the CII's focus list between 1991-1994, Opler & Sokobin (1997) reported significant findings that the firms had improved share performance and increased in return on assets (ROA) over the two years following listing. Smith (1996) investigated 51 firms targeted by CalPERS between 1987-1993 and found that firms adopting proposal solutions (e.g., creating shareholder advisory committee or restructuring executive compensation) experienced positive abnormal returns over a longer period of time. However, he suggested it would be detrimental to shareholders if proposal solutions were not adopted. That is, whether institutional shareholder activism can improve firm performance depends upon the outcome of firm targeting.

Opponents of institutional shareholder activism, however, argued that institutions may impair firm management and corrupt firm performance due to their lack of skills and experience in improving managers' decisions (Lipton & Rosenblum, 1991; Wohlstetter, 1993). Studying a sample of 125 firms targeted by five activist institutions between 1987-1993, Del Guercio & Hawkins (1999) did not find any evidence of abnormal returns of the sample firms. Further, the same conclusion was made with sub-samples grouped by sponsor, outcome and proposal topic. Karpoff et al. (1996) examined 290 firms, representing 583 shareholder proposals, and did not find any significant abnormal returns of the sample firms around *Wall Street Journal* announcements on proposals, around proxy mailing dates, or around shareholder meeting dates. Their study did not find significant abnormal returns following successful proposals in the long run, either. Martin et al. (1996) analyzed the impact of institutional shareholder activism on Sears'

share performance. They did not find significant abnormal returns around three specific event dates, one of which was the announcement of its listing on CalPERS' target roster. Examining firms targeted by the nine most active public pension funds between 1987-1993, Wahal (1996) did not find any significant relationship between shareholder activism and long-term stock performance, or between shareholder activism and net income.

The empirical evidence discussed above casts doubt on the efficacy of institutional shareholder activism in improving firm performance, even though firm performance is an important determinant when pension funds target firms for corporate governance proposals (Huson, 1997; John & Klein, 1995).

Free Rider Problem

Public pension funds sponsored 463 proxy proposals seeking changes in corporate governance between 1987-1994 (Gillan & Starks, 2000); however, only 13 institutions out of a sample of 975, were identified as having ever submitted a shareholder proposal during a similar period 1986-1994 (Daily, Johnson, Ellstrand & Dalton, 1996). In other words, few institutional investors are considered activist shareholders that are willing to spend time and money on corporate governance issues. Even if they do actively participate in corporate governance, their spending on shareholder activism is considerably less than that on active money management ensuring that spending on shareholder activism will not adversely impact their returns (Black, 1997). CalPERS spends approximately $500,000 annually, or 0.002% of their domestic equity holdings on all activism activities (Smith, 1996) and the Teachers Insurance Annuity Association-College Retirement Equities Fund (TIAA-CREF) spends about $1 million, or

0.002% of their assets (Del Guercio & Hawkins, 1999) annually, whereas active management fees and trading costs normally range from 0.2% to 0.5% (Black, 1997). That is, the limited expenditures on activism or corporate governance by institutional investors implies that the benefit expected from the activity might not be able to cover the cost incurred (Pozen, 1994). The potential for some institutional investors to free ride on the governance efforts of others may partially account for the lack of attention and funds to governance issues (Black, 1997).

The free rider problem may also be observed when individual investors who own a small portion of equity share the benefit of institutional monitoring efforts without incurring any monitoring costs. Even when individual investors have incentives to monitor, they spend time and money studying materials in an attempt to vote for the proposal that is most beneficial. However, their vote may not be influential; they intend to free ride with larger shareholders or institutional investors in particular (Harford, Chen & Li, 2004; Maug, 1998; Stoughton & Zechner, 1998). Thus, the free rider problem could deter institutional investors from engaging in corporate governance efforts and possibly dilute their influence on firm performance.

## Restrictions on Institutional Ownership in the Casino Industry

When investing in casino firms, institutional investors are restricted by certain regulations such as the limited percentage of institutional ownership permitted in a casino firm and astricted purpose of investment (Nevada Gaming Control Board, 2005). A review of noteworthy state regulations on institutional ownership in casino firms in two

representative gaming jurisdictions, Nevada and New Jersey, in the U.S., is presented as follows.

Nevada

Regulations of the Nevada Gaming Commission (Commission) and State Gaming Control Board (Board) require that beneficial owners of more than 10% of the voting or equity securities of a registered casino gaming corporation apply to the Commission for a finding of suitability within 30 days after the Chairman of the Board mails a written notice requiring such filing (Nevada Gaming Control Board, 2005). An institutional investor with beneficial ownership of more than 10% but not more than 15% of a casino firm's voting or equity securities, however, may apply to the Commission for a waiver if the institutional investor holds the voting or equity securities for investment purposes only. Nevertheless, an institutional investor with a waiver approved, cannot grant an option to purchase, sell, assign, transfer, pledge or make any disposition of any voting or equity securities without prior approval of the Commission. Therefore, this highly decreases the liquidity of institutional shareholdings in casino firms. Regulation 15.430 (Nevada Gaming Control Board, 2005) further requires that:

> Institutional investors hold and/or have held the voting or equity securities of the corporate licensee or the holding company for (1) investment purposes only, and (2) in the ordinary course of business as an institutional investor and not for the purpose of (a) causing, directly or indirectly, the election of the member of the board of directors, or (b) affecting any change in the corporate charter, bylaws,

other organic document, management, policies or operations of the corporate licensee or any of its affiliates (p. 174).

Institutional investors will be subject to licensing, registration or a finding of suitability, in order to protect public interest, if they were found not complying with the waiver requirements. Further, if an institutional investor subsequently changes its intent not to hold its voting or equity securities for investment purpose only, it must notify the chairman of the Board within two business days (Nevada Gaming Control Board, 2005).

New Jersey

The Casino Control Act in New Jersey applies similar waiver requirements to institutional investors in its jurisdiction as Nevada. The major differences between the two states in granting a waiver of licensee qualification for an institutional investor are that New Jersey restricts institutional ownership to 10% of the equity securities or 50% of debt securities in a casino firm, and institutional investors are given up to 30 days to notify the New Jersey Casino Control Commission of a change of intent (New Jersey Casino Control Commission, 2005). Institutional investors applying for the waiver are also subject to the "investment purposes only" rule.

How will these regulations affect the relationship between institutional investors and casino firm performance? Restrictive state regulations, placed upon institutional investors who intend to invest intensively in the casino industry on the one hand but do not want to be subject to rigorous rules on the other, not only may deter them from making excessive capital investment but also may reduce their influence on corporate governance and possibly firm performance when exercising their fiduciary duty. Therefore, the state

regulations imposed on institutions that are major casino firm shareholders may prevent the institutions from exercising their collective power or from having any significant impact on firm performance. Nevertheless, institutional investors, as long as each owns less than 15% of outstanding shares of a casino firm, may act as a cohort of investors and collectively exert significant influence on casino firm performance. Therefore, a significant impact of institutional ownership on casino firm performance may still be reasonably expected.

## Institutional Ownership and Firm Performance

Pound (1988) argued that institutional investors may affect firm value either in a positive or a negative manner. The positive effect occurs when institutional investors act as more efficient monitors of firm managers than individual shareholders. Institutional investors not only have greater incentives to monitor, which accompany the large financial stakes they invest in a firm, but they also have greater expertise in monitoring the firm at lower costs than small individual investors. The negative effect occurs when institutional investors conspire with firm managers against their own fiduciary duty to their beneficiaries. A third possibility, argued by Demsetz (1983), is that no relationship between ownership structure (e.g., insider, block shareholders) and firm performance should be observed because a firm's ownership structure is endogenously determined such that its shareholders' wealth is maximized. Empirical studies have shown inconsistent results in how institutional ownership may influence firm performance (Agrawal & Knoeber, 1996; Chaganti & Damanpour, 1991; Clay, 2001; Craswell et al., 1997; Han & Suk, 1998; Loderer & Martin, 1997; McConnell & Servaes, 1990; Woidtke,

2002). The inconclusive may stem from inconsistency in variable measurement including firm performance measures and other control variables, sample periods, estimating techniques (e.g., OLS and 2SLS) and the accountability of the endogeneity of a firm's ownership structure (Demsetz & Villalonga, 2001).

Tobin's *Q* as Firm Performance Measure

Tobin's *Q* is the most commonly-adopted performance measure in modeling the relationship between ownership structure and firm performance in previous studies (Cho, 1998; Craswell et al., 1997; Demsetz & Villalonga, 2001; Hermalin & Weisbach, 1991; Himmelberg et al., 1999; Holderness et al., 1999; Loderer & Martin, 1997; McConnell & Servaes, 1990; Morck et al., 1988). It is defined as the ratio of the year-end total market value of the firm to the estimated replacement costs of total assets (Tobin, 1969). When a firm is worth more than its value based on what it would cost to rebuild it, or when Tobin's *Q* is larger than one, excess profits are being earned and these profits are above and beyond the level necessary to keep the firm in the industry (Lindenberg & Ross, 1981).

Lindenberg & Ross (1981) devised a formula (L-R *Q*) to measure Tobin's *Q*, and the majority of the data needed was obtained from the Manufacturing Sector Master File at the National Bureau of Economic Research (NBER) and Standard & Poor's COMPUSTAT. Their formula is as follows:

$$\text{L-R } Q = \frac{(\text{PREFST} + \text{VCOMS} + \text{LTDEBT} + \text{STDEBT} - \text{ADJ})}{(\text{TOTASST} - \text{BKCAP} + \text{NETCAP})},$$

where,

PREFST: the liquidating value of a firm's preferred stock;

VCOMS: the price of the firm's common stock multiplied by the number of shares outstanding on the last trading day of the year (i.e., December 31);

LTDEBT: the value of the firm's long-term debt adjusted for its age structure;

STDEBT: the book value of the firm's current liabilities;

ADJ: the value of the firm's net short-term assets;

TOTASST: the book value of the firm's total assets;

BKCAP: the book value of the firm's net capital stock; and,

NETCAP: the firm's inflation-adjusted net capital stock (Lindenberg & Ross, 1981).

Due to the lack of available data for calculating the L-R $Q$ from NBER after 1987 and possible difficulty in estimating the replacement costs of total assets (the denominator of Tobin's $Q$), Chung & Pruitt (1994) proposed a simple approximation of Tobin's $Q$ and it was widely adopted in studies (e.g., Agrawal & Knoeber, 1996) examining the ownership structure/firm performance relationship thereafter.

Using basic financial and accounting information readily available from a firm's financial statements, Chung & Pruitt (1994) formulated an approximate $Q$ that is defined as follows:

$$\text{Approximate } Q = \frac{(\text{MVE} + \text{PS} + \text{DEBT})}{\text{TA}},$$

where,

MVE: the product of a firm's share price and the number of shares outstanding on the last trading day of the year;

PS: the liquidating value of the firm's outstanding preferred stock;

DEBT: the value of the firm's short-term liabilities net of its short-term assets, plus the book value of the firm's long-term debt; and,

TA: the book value of total assets of the firm (Chung & Pruitt, 1994).

Approximate $Q$ in their study can explain 96.6% of the variations in L-R $Q$. A similar $Q$ measure, the simple $Q$, was developed by Perfect & Wiles (1994) and is defined as follows:

$$\text{Simple } Q = \frac{(\text{EQUITY} + \text{LTD} + \text{STD} + \text{PFD} + \text{CV})}{\text{ASSET}},$$

where,

EQUITY: the market value of equity;

LTD: the book value of long-term debt;

STD: the book value of short-term debt;

PFD: the liquidating value of preferred stock;

CV: the book value of convertible debt and convertible preferred stock; and,

ASSET: the book value of total assets.

Perfect & Wiles (1994) reported a correlation of 0.93 with L-R $Q$.

Although accounting profit rates (e.g., return on equity "ROE", or return on assets "ROA") have also been used as firm performance measures in other studies (e.g., Chaganti & Damanpour, 1991; Demsetz & Lehn, 1985), two major aspects, a time perspective and the measuring entity, differentiate Tobin's $Q$ from other accounting profit measures (Demsetz & Villalonga, 2001). Firstly, as far as time perspective is concerned, a backward-looking accounting profit rate allows investors to look at what management has accomplished, while the forward-looking Tobin's $Q$ helps investors gauge what management will achieve in addition to what they have already done. Secondly, for accounting profit rate, the accountant is the entity measuring accounting performance and is restricted by the accounting standards and constraints, while for Tobin's $Q$, the community of investors, restricted by their acumen, optimism or pessimism, are the entity measuring firm performance involving certain investor psychology (Demsetz & Villalonga, 2001). Tobin's $Q$ is more favorable than accounting profit rate to most of the previous researchers when modeling the ownership structure/firm performance relationship because investors do not ignore past accounting profit when determining reasonable expectations for the future profitability of firms. That higher stock prices often accompany higher accounting profit rates is reflected by the numerator of $Q$. Further, the denominator of $Q$, when measured by the book value of tangible assets rather than by replacement costs, is similar to what accountants use in estimating the firm's capital investment (Demsetz & Villalonga, 2001).

## Ownership Endogeneity

One of the possible factors leading to inconclusive results of the ownership structure/firm performance relationship is the treatment of the ownership structure variable. Demsetz (1983) first argued that the ownership structure of a firm, whether concentrated or diffused, is an endogenous outcome of competitive selection within the firm leading to firm value maximization. According to Demsetz (1983), ownership endogeneity implies that the underlying conditions under which a firm operates determines which ownership structure is best for shareholders. That is, an equilibrium organization of the firm is achieved when various advantages and disadvantages of monitoring cost and cost of production are balanced. Furthermore, Demsetz (1983) argued that there is no reason to expect small firms with highly concentrated ownership structures to perform better or worse than large firms with highly diffuse ownership structures (Harold Demsetz, personal communication, March 3, 2004). In other words, no systematic relationship between ownership structure and firm performance should be observed.

Demsetz's (1983) view on ownership endogeneity is partially challenged by Agrawal & Knoeber (1996). Treating the division of shares between insiders and outsiders as an internally-chosen decision within the firm, Agrawal & Knoeber (1996) asserted that the level of shareholdings by institutions is chosen externally. They further argued that institutions make an independent choice of the size of their shareholdings, and, therefore, their decisions are not necessarily consistent with firm value maximization. This argument implies that a systematic relationship between institutional ownership and firm performance may exist.

When modeling the relationship between ownership structure and firm performance in an endogenous framework, due to considerations such as insider information and performance-based compensation, firm performance is at least as likely to affect ownership structure as ownership structure is to affect firm performance. Therefore, the impact of firm performance on ownership structure should be examined simultaneously while investigating the impact of ownership structure on firm performance if ownership endogeneity is to be accounted for (Demsetz & Villalonga, 2001). Other studies (Cho, 1998; Clay, 2001; Demsetz & Lehn, 1985; Demsetz & Villalonga, 2001; Holderness et al., 1999; Loderer & Martin, 1997) echoed Demsetz and provided further evidence of the endogeneity of ownership structure when modeling the relationship between ownership structure (e.g., insider, blockholder, and institutional) and firm performance. In some studies where ownership structure was treated endogenously, firm performance measure was found to affect ownership structure but not the reverse. Cho (1998) examined the relationship between insider ownership and firm performance measured by Tobin's $Q$ using 326 of the 500 largest U.S. firms (*Fortune* 500) in 1991, and found that insider ownership increases significantly with Tobin's $Q$, but not vice versa. Demsetz & Villalonga (2001) studied how large shareholders may relate to firm performance measured by Tobin's $Q$ using a 223-firm random sub-sample of the sample in the original Demsetz & Lehn's (1985) study. They claimed that firm performance impacts large shareholder ownership in a simultaneous framework but no evidence to support the notion that variations across firms in observed ownership structures lead to systematic variations in firm performance. Loderer & Martin (1997) also tested the relationship between insider ownership and firm performance measured by Tobin's $Q$ using

acquisition data which includes 867 firms between 1978-1988. They reported that insider ownership decreases significantly with Tobin's $Q$ but the reverse is not evidenced. Nevertheless, treating institutional ownership endogenously, Clay (2001) provided empirical evidence showing that institutional ownership increases firm value as measured by a proxy for Tobin's $Q$. His study will be reviewed in the next section of this chapter.

## Empirical Studies on the Institutional Ownership and Firm Performance Relationship

Agrawal & Knoeber (1996) examined firm performance and seven mechanisms to control agency problems between managers and shareholders based on a list of 383 *Fortune 800* firms in 1987. In their study firm performance was measured by a simple $Q$ devised by Perfect & Wiles (1994). Agrawal & Knoeber (1996) first regressed firm performance on the entire set of control mechanisms using OLS and later considered inter-correlation among the control mechanisms, incorporating firm performance and all the control mechanisms in a simultaneous equations framework using 2SLS. They found institutional ownership, one tested mechanism, an insignificant determinant of firm performance in both the OLS and 2SLS results. In addition, only board composition out of all the seven control mechanisms examined had a significant impact on firm performance echoing Demsetz & Lehn's (1985) study that choices of control mechanisms are made so as to maximize firm value. Other firm specific control variables included were firm size by log of total assets, R&D expenditures to total assets, advertising expenditures to total assets and dummy variables for regulated firms and those listed on NYSE.

In an attempt to examine institutional investors' potential influence on the firm's capital structure and the firm's financial performance, Chaganti & Damanpour (1991) examined 40 pairs of firms in 40 industries in the U.S. manufacturing sector continuously surveyed by the *Value Line* between 1983-1985. Firms with the highest and lowest three-year average institutional shareholdings in each of the 40 industries were selected for a total of 80 firms in their study. Long-term debt as a percentage of the firm's total capital was used as a measure of the firm's capital structure, while four accounting measures, namely, the percentage of return on assets (ROA) measuring the efficiency with which total assets are managed, the percentage of return on equity (ROE) measuring the efficiency with which shareholders' investments are managed, the price/earnings (P/E) ratio reflecting a relative value of the firm's stock in the market and, lastly, percentage of total stock returns capturing income to shareholders in the form of dividends and capital gains, were used as financial performance measures. The results of their study showed that all four financial measures for the group with the highest institutional ownership are higher than those for the group with the lowest institutional ownership; however, only the difference between the two groups on ROE is statistically significant. Furthermore, institutional ownership was found to help lower the long-term debt-to-capital ratio. This implies that institutional shareholders may serve as efficient monitoring agents in lieu of creditors.

In probing the relationship between institutional ownership and firm performance where institutional ownership was treated endogenously, Clay (2001) examined 8,951 firms between 1988-1999. He found empirical evidence supporting a positive impact of institutional ownership on firm performance, as measured by proxy $Q$, not only in the

OLS model but also in a simultaneous equations framework using the 2SLS technique. Specifically, Clay's (2001) results suggested that a one percent increase in institutional ownership translates to a 0.75% enhancement in firm performance. Proxy $Q$ in his study was calculated as:

$$\text{Proxy } Q = \frac{(\text{ASSET} + \text{EQUITY} - (\text{CE} + \text{DT}))}{\text{ASSET}},$$

where,

ASSET: the book value of total assets;

EQUITY: the market value of equity;

CE: the book value of common equity; and,

DT: deferred taxes.

In particular, this proxy $Q$ has been empirically used by previous researchers (Gompers et al., 2003; Kaplan & Zingales, 1997) and will be adopted in this dissertation to measure firm performance in the hospitality industry. The S&P 500 Index was used as an instrumental variable for institutional ownership in Clay's (2001) study. Other control variables included firm size by log of sales, firm age, time trend, R&D expenditures to total assets, and industry membership. No reverse impact of firm performance on institutional ownership was assessed in his study.

Craswell et al. (1997) examined the effect of institutional ownership on firm performance with two cross-sectional Australian samples, further divided by firm size, for 1986 and 1989 respectively. A total of 82 large and 81 small firms in the 1986

sub-sample and 95 large and 91 small firms in 1989 formed the four groups. Firm performance was measured by a proxy for Tobin's $Q$ and was defined as the ratio of market value of equity to book value of net assets. Craswell et al. (1997) first regressed their proxy $Q$ on insider ownership and insider ownership squared, and later added institutional ownership as an additional explanatory variable to the regression equation in the four groups. They failed to find any empirical evidence supporting the hypothetic relationship between institutional ownership and firm performance. Other control variables included in the performance equation were financial leverage measured by debt ratio, firm size by log of total assets, R&D expenditures to total assets and industry membership dummy variables.

Using long-term stock returns as a measure of firm performance for 301 NYSE/AMEX firms during 1988-1992, Han & Suck (1998) examined the effect of insider ownership and institutional ownership simultaneously on firm performance while other variables (e.g., size of the firm, earnings/price ratio) that may cause spurious relationships between interested variables were controlled. They found that stock returns, represented by the geometric average return for the five year period for the firms, are positively related to institutional ownership at the 10% significance level. Han & Suck (1998) further divided the sample into three sub-samples representing the high, medium and low institutional ownership groups, and institutional ownership was still found to be a significant determinant of firm performance as evidenced by the F test and Kruskal-Wallis test conducted. They attributed this observed significant relationship to effective monitoring of firm management by institutional investors.

In investigating the relationship between executive ownership and firm performance in the context of 867 acquisitions of publicly-traded firms in the U.S. between 1978-1988, Loderer & Martin (1997) estimated a simultaneous equations model where insider ownership by managers and directors and firm performance measured by a simple $Q$ (Perfect & Wiles, 1994) were the two dependent variables for the two equations respectively. Institutional ownership, added as an additional explanatory variable in the performance equation in addition to other control variables, was not found to be a significant determinant of firm performance. Other control variables included in the study were logarithmic transformation of net sales measuring firm size, industry membership dummy variables, and standard deviation of stock returns.

McConnell & Servaes (1990) hypothesized that the value of a firm is a function of the distribution of equity ownership among corporate insiders, individual atomistic shareholders, block shareholders and institutional investors. They tested their hypothesis using a cross-sectional sample of 1,173 firms listed on NYSE/AMEX in 1976 and another 1,093 firms in 1986. In their study, McConnell & Servaes (1990) employed a proxy for Tobin's $Q$ as a measure for firm performance. Their proxy for Tobin's $Q$ was similar to what Chung & Pruitt (1994) proposed, although McConnell & Servaes (1990) used the replacement value of total assets in the denominator. The control variables included along with the ownership variables in the regression equation were financial leverage measured as the market value of debt divided by the replacement value of total assets, R&D intensity measured as R&D expenditures for the year divided by the replacement value of total assets, advertising intensity measured as advertising expenditures divided by the replacement value of total assets, and, lastly, the replacement

value of total assets representing firm size. The results of McConnell & Servaes' (1990) study showed a significant and positive impact of institutional ownership on firm performance. They further claimed that such a relationship reveals an efficient monitoring role assumed by institutional investors.

Heterogeneous Institutions and Firm Performance

As mentioned in Chapter One, different types of institutions reveal different investment behaviors and pursue diverse objectives subject to various conditions and constraints. That is, considering the heterogeneity of institutions when modeling the institutional ownership/firm performance relationship may reveal different results subject to institution types, objectives and incentive structures, as opposed to previous studies treating all institutions as homogenous.

In examining the relationship between firm performance, as measured by adjusted $Q$, and two types of pension funds—public and private, using a pooled sample of 359 *Fortune* 500 firms between 1989-1993, Woidtke (2002) found that adjusted $Q$ is positively related to ownership by private pension funds but negatively related to ownership by public pension funds using 2SLS in a simultaneous equations framework. She argued that the positive effect associated with private pension funds is consistent with the larger, more performance-based compensation for private pension fund administrators leading to a convergence of interests with other shareholders, while the negative effect associated with public pension fund ownership is driven by the ownership of public pension funds that focus on firms with poor corporate governance issues. Adjusted $Q$ equals to a firm's Tobin's $Q$ less the median $Q$ for its industry. Other control variables included were financial leverage measured by debt ratio, R&D expenditures to

total assets, advertising expenditures to total assets and firm replacement value (Woidtke, 2002).

A summary of previous empirical studies on the institutional ownership/firm performance relationship is presented in Table 1.

Table 1 Summary of Previous Studies Examining the Institutional Ownership/Firm Performance Relationship

| Author | Sample & Period | Institutional Ownership Variable | Performance Measure | Control Variable | Statistical Method | Ownership Endogenous? | Results |
|---|---|---|---|---|---|---|---|
| Agrawal & Knoeber (1996) | 383 *Fortune 800* firms in 1987 | The percentage of shares held by institutions | Simple *Q* | (1) Firm size by log of total assets;<br>(2) R&D expenditures to total assets;<br>(3) Advertising expenditures to total assets;<br>(4) dummy variables for regulated & NYSE listed firms | OLS & 2SLS | Yes | No relationship between institutional ownership & firm performance for both OLS & 2SLS |
| Chaganti & Damanpour (1991) | 80 U.S. manufacturing firms between 1983-1985 | The percentage of shares held by institutions | (1) Return on assets (ROA);<br>(2) Return on equity (ROE);<br>(3) Price/earnings (P/E) ratio;<br>(4) Percentage of stock returns | Stockholdings by corporate executives | Hierarchical multiple regression | No | Performance measures are higher for the group with higher institutional ownership |
| Clay (2001) | 8,951 firms between 1988-1999 | The percentage of shares held by institutions | Proxy *Q* | (1) Firm size by log of sales;<br>(2) Time trend;<br>(3) Firm age;<br>(4) R&D expenditures to total assets | OLS & 2SLS | Yes | Institutional ownership has positive impact on firm performance; no reverse relationship was assessed |
| Craswell, Taylor & Saywell (1997) | 349 Australian firms in 1986 & 1989 | The percentage of shares held by institutions | Proxy for Tobin's *Q* | (1) Financial leverage by debt ratio;<br>(2) Firm size by log of total assets;<br>(3) R&D expenditures to total assets;<br>(4) Industry membership dummy variable | Linear & curvilinear regression | No | No relationship between institutional ownership & firm performance |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Han & Suck (1998) | 301 NYSE/AMEX firms | The percentage of shares held by institutions | Long-term stock returns | (1) Systematic risk (beta);<br>(2) Firm size by log of market value of equity;<br>(3) E/P ratio | Weighted least-squares | No | Institutional ownership has positive impact on firm performance |
| Loderer & Martin (1997) | 867 U.S. firms between 1978-1988 | The percentage of shares held by institutions | Simple *Q* | (1) Firm size by log of net sales;<br>(2) Industry membership dummy variable;<br>(3) S.D. of stock returns | OLS & 2SLS | Yes | No relationship between institutional ownership & firm performance |
| McConnell & Servaes (1990) | 2,266 NYSE/AMEX firms in 1976 & 1986 | The percentage of shares held by institutions | Proxy for Tobin's *Q* | (1) Financial leverage by debt ratio;<br>(2) R&D expenditures to total assets;<br>(3) Advertising expenditures to total assets;<br>(4) the replacement value of total assets | OLS | No | Institutional ownership has positive impact on firm performance |
| Woidtke (2002) | 1,765 *Fortune 500* firms between 1989-1993 | The percentage of shares held by private and public pension funds | Adjusted Tobin's *Q* | (1) Financial leverage by debt ratio;<br>(2) R&D expenditures to total assets;<br>(3) Advertising expenditures to total assets;<br>(4) the replacement value of total assets | 2SLS | Yes | Private pension funds have positive impact on firm performance while public pension funds have negative impact on firm performance |

## Summary

Previous research on the relationship between institutional ownership and firm performance has shown mixed results as to the direction of causality, the treatment of ownership structure endogeneity, the monitoring role of institutional investors, the industries investigated, the control variables selected, and the time period sampled. The review of related literature guides the direction of this dissertation in examining the institutional ownership/firm performance relationship in the hospitality industry, and the next chapter will focus on the methodology.

# CHAPTER 3

## METHODOLOGY

The review of the existing literature in Chapter Two provides both a theoretical and empirical foundation for variable selection and statistical technique adoption in this dissertation for testing the relationship between institutional ownership and firm performance in the hospitality industry. Ownership endogeneity argued by Demsetz (1983) and evidenced by other empirical studies (e.g., Clay, 2001) suggests simultaneous determination of institutional ownership and firm performance. Furthermore, Demsetz & Villalonga (2001) suggested that firm performance is at least as likely to affect ownership structure as ownership structure is to affect firm performance. That is, a simultaneous equations system consisting of two equations, with institutional ownership and firm performance as the dependent variables will be estimated using the 2SLS technique if deemed proper. In a system comprised of interdependent endogenous variables, the 2SLS technique is preferred over OLS as the latter would lead to biased and inconsistent parameter estimates (Wooldridge, 2003). The first section of this chapter will present the hypotheses constructed for this dissertation, and the next several sections will then describe the development of the proposed model, the statistical techniques adopted, the underlying assumptions for the statistical techniques, and the sample and data used for

testing the model. Lastly, the proposed model will be tested using the data collected for the three sectors (i.e., restaurant, casino and hotel) of the hospitality industry.

## Hypotheses

In consideration of the research questions stated in Chapter One and in review of related literature in Chapter Two, the following hypotheses will be tested in this dissertation:

HYPOTHESIS I: Institutional ownership will have a positive impact on firm performance in the restaurant sector;

HYPOTHESIS II: Institutional ownership will have a positive impact on firm performance in the casino sector; and,

HYPOTHESIS III: Institutional ownership will have a positive impact on firm performance in the hotel sector.

## The Proposed Simultaneous Equations Model

In view of the research questions of whether institutional ownership influences firm performance in the hospitality industry and in consideration of potential firm-specific variables that might influence firm performance, the first proposed equation [Eq. (1)], employing firm performance as the dependent variable and institutional ownership as one of the independent variables, is described as follows:

$$Q = \beta_0 + \beta_1 INST + \beta_2 SIZE + \beta_3 DEBT + \beta_4 FIX + \varepsilon_1, \quad (1)$$

where,

$Q$: proxy $Q$;

INST: the percentage of outstanding shares held by institutions;

SIZE: log of total assets;

DEBT: the book value of debt as a fraction of the book value of total assets;

FIX: expenditures on fixed plant and equipment as a fraction of sales revenues;

$\beta_0$: constant;

$\beta_1$-$\beta_4$: coefficient; and,

$\varepsilon_1$: error term.

Here, employing proxy $Q$ as the performance measure, Eq. (1) is a natural OLS equation with INST as one of the independent variables, along with other firm-specific control variables including SIZE, DEBT, and FIX. However, OLS estimation alone in Eq. (1) will be inconsistent and biased if it contains at least one endogenous explanatory variable (Wooldridge, 2003). Due to the suspicious endogeneity of the institutional ownership variable (i.e., INST) as evidenced in some previous studies (e.g., Clay, 2001) that may produce inconsistent and biased coefficient estimates in Eq. (1), a second OLS model [Eq. (2)], with INST as the dependent variable and $Q$ and other firm-specific variables including SIZE, ROA, BETA, DEBT and DIV as the independent variables, is specified and described as follows:

$$\text{INST} = \beta_0 + \beta_1 Q + \beta_2 \text{SIZE} + \beta_3 \text{ROA} + \beta_4 \text{BETA} + \beta_5 \text{DEBT} + \beta_6 \text{DIV} + \varepsilon_2, \qquad (2)$$

where,

INST: the percentage of outstanding shares held by institutions;

$Q$: proxy $Q$;

SIZE: log of total assets;

ROA: net income divided by total assets;

BETA: systematic risk;

DEBT: the book value of debt as a fraction of the book value of total assets;

DIV: dividend payout ratio;

$\beta_0$: constant;

$\beta_1$-$\beta_6$: coefficient; and,

$\varepsilon_2$: error term.

The independent variables in Eq. (2) not only act as potential determinants of institutional ownership for hospitality firms, but, more importantly, some of them play the role of instrumental variables for INST in the first stage of the 2SLS technique if 2SLS is deemed proper for this dissertation. Thus, a simultaneous two-equation model consisting of Eqs. (1) and (2) is specified. The reasons for selecting the specific independent variables will be provided later in the subsection oo Independent Variables. The simultaneous equations model is essentially a combination of two OLS models in a simultaneous framework where $Q$ and INST are the two interdependent endogenous variables jointly determined in the system. A graphical representation of the proposed simultaneous equations model is shown in Figure 1.

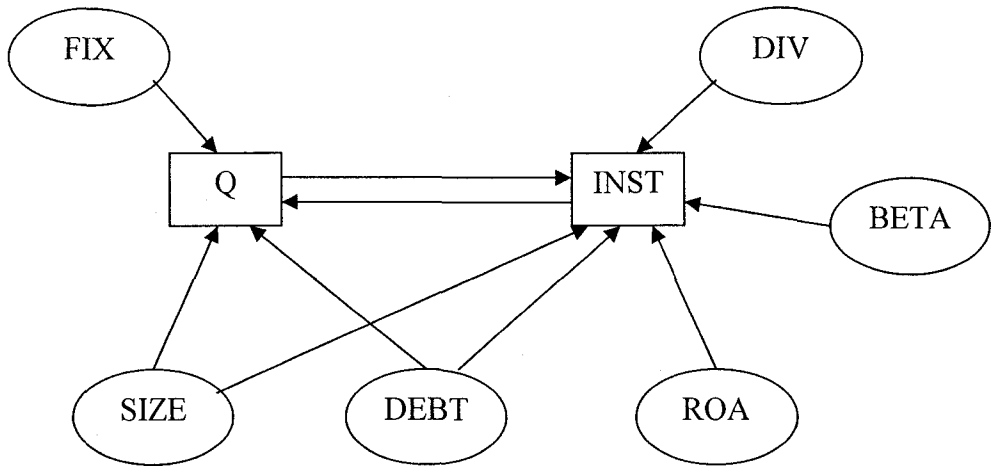


Figure 1. The Proposed Simultaneous Equations Model

Dependent Variables

The two dependent variables are a proxy for Tobin's $Q$ (i.e., proxy $Q$) in Eq. (1) and institutional ownership (i.e., INST) in Eq. (2). Due to a possible distortion from the estimation of replacement costs of total assets when calculating Tobin's $Q$ using the L-R procedures, a proxy for Tobin's $Q$, as widely used by previous studies (Clay 2001; Gompers et al., 2003; Kaplan & Zingales, 1997), was used as a measure of firm performance in this dissertation. Proxy $Q$ is defined as follows:

$$\text{Proxy } Q = \frac{(\text{ASSET} + \text{EQUITY} - (\text{CE} + \text{DT}))}{\text{ASSET}},$$

where, ASSET is the book value of total assets, EQUITY is the market value of common equity, CE is the book value of common equity, and DT is deferred taxes.

Institutional ownership (INST) is defined as the year-end percentage of outstanding ordinary shares of firms owned by financial institutions. Institutional investment managers are required to report their shareholdings in Form 13F to the SEC quarterly if they exercise investment discretion of $100 million or more in Section 13(f) securities (U.S. Securities and Exchange Commission, 2004). Section 13(f) securities generally include equity securities that trade on an exchange or are quoted on the National Association of Securities Dealers Automated Quotation (NASDAQ), equity options and warrants, shares of closed-end investment companies, and convertible bonds. Form 13F requires disclosure of the names of institutional investment managers, the names and classes of the securities managed, the Committee on Uniform Securities Identification Procedures (CUSIP) number, the number of shares owned, and the total market value of each security (U.S. Securities and Exchange Commission, 2004).

In addition, INST and $Q$ also serve as possible endogenous, or pure exogenous, explanatory variables in Eqs. (1) and (2).

Independent Variables

When examining the relationship between institutional ownership and firm performance, various firm-specific characteristics should be controlled for the possibility of their causing spurious correlation between institutional ownership and firm performance (Welch, 2003). One way of controlling firm-specific characteristics is to include and model them together with the interested variables (i.e., $Q$ and INST). All the

independent variables discussed below are control variables and are used in either one or both of Eqs. (1) and (2).

Firm size (SIZE), measured by log of total assets, is included in both Eqs. (1) and (2) to account for the possibility that firm size may affect firm performance, institutional ownership or both. The amount of total assets may vary from firm to firm, and large discrepancies may exist among different firms. Logarithmic transformation of total assets can stretch extremely small values and condense extremely large values of total assets and make data more normally distributed (Clark, 1984). Transformation of data also reduces the impact of outliers (Tabachnick & Fidell, 2001). For Eq. (1), since growth opportunities and Tobin's $Q$ are likely lower for larger firms (Agrawal & Knoeber, 1996) and firm size was found negatively related to firm performance in previous studies (Agrawal & Knoeber, 1996; Craswell et al., 1997; Crutchley et al., 1999; McConnell & Servaes, 1990; Morck et al., 1988; Woidtke, 2002), a negative relationship between proxy $Q$ and firm size is expected. For Eq. (2), previous studies (Crutchley et al., 1999; Herman, 1981; O'Brien & Bhushan, 1990) showed that institutional investors are more likely to buy stocks of large firms, possibly due to the fact that those firms have the resources and capacity to reduce the risk of their investment in projects and are less subject to risk of bankruptcy (Tong & Ning, 2004). Thus, a positive relationship between institutional ownership and firm size is anticipated.

Debt ratio (DEBT), representing firm leverage and calculated as total debt divided by total assets, is included in both Eqs. (1) and (2). For Eq. (1), first, debt ratio serves to capture a value-enhancing effect of corporate tax shields that could result in higher values of performance indicators, including Tobin's $Q$ (Morck et al., 1988). Second, as

suggested by the pecking order theory, well-performing firms in terms of their profitability are likely to be less-leveraged because they tend to finance their future projects with internally generated earnings first (Morck et al., 1988; Myers & Majluf, 1984; Tong & Ning, 2004; Welch, 2003). Lastly, debt ratio can further capture a value-enhancing (reducing) effect when future interest payment obligations are paid back with relatively less (more) valuable money than was borrowed when a relative inflation (deflation) was observed (Demsetz & Villalonga, 2001). Therefore, either a positive or a negative relationship between firm leverage and firm performance can be expected in Eq. (1). For Eq. (2), firm leverage may serve, on the one hand, as the level of monitoring of firm management provided by creditors that otherwise would have come from equity holders (Demsetz & Villalonga, 2001). On the other hand, firm leverage may serve as a signal of possible bankruptcy risk of the firm. A highly-leveraged firm may discourage institutional investors from holding shares of such firm, and, therefore, a negative effect of debt leverage on INST is projected.

Accounting distortion can also arise from how fixed assets (e.g., plant & equipment) are depreciated over their useful life (Demsetz & Villalonga, 2001). Different depreciation methods (e.g., straight-line, sum of the years digit, etc.) can yield different book values of the same fixed assets and possibly distort proxy $Q$, in that the book value of total assets represents the denominator of proxy $Q$. Expenditures on fixed plant and equipment, or capital expenditures, as a fraction of sales revenues (FIX) is therefore also included in Eq. (1) as in other studies (Demsetz & Villalonga, 2001; Welch, 2003) and can either result in a positive or a negative impact on proxy $Q$.

ROA, defined as net income divided by total assets measuring firm profitability, is included in Eq. (2) to show whether institutional investors are more attracted to firms with higher profitability. O'Barr & Conley (1992) argued that financial institutions tend to invest in highly profitable firms so as to fulfill their fiduciary duty to their investors, and their argument was supported empirically by Crutchley et al. (1999). Therefore, in Eq. (2) a positive relationship between ROA and INST is expected.

BETA, or the systematic risk of a firm's stock, is included in Eq. (2) to represent the undiversifiable portion of the investment risk inherent in stock ownership that may affect institutional investors' decision to hold a certain stock. O'Brien and Bhushan (1990) found that BETA is positively related to institutional ownership possibly because institutional investors have incentives to invest in high-risk securities for higher return on their portfolios, hence higher compensation for themselves. However, Crutchley et al. (1999) found evidence that institutional ownership and BETA are negatively related in their 1987 sample and positively related in 1993. Therefore, either a positive or a negative relationship between INST and BETA may be expected in Eq. (2).

DIV, representing dividend payout ratio and estimated as dividends divided by income before extraordinary items adjusted for common stock equivalents (COMPUSTAT, 2003), is included in Eq. (2) to show whether dividend payouts would influence institutional investors' decision to hold a firm's stock. On the one hand, institutional investors seek a higher return, including dividend income, to carry out their fiduciary duty. Empirical evidence has shown that a higher dividend payout ratio leads to larger institutional ownership (Allen, Bernardo & Welch, 2000; Crutchley et al., 1999; Short, Zhang & Keasey, 2002). Grinstein & Michaely (2005) also reported that

institutional investors prefer dividend-paying firms to non-dividend-paying ones, but among firms that pay dividends, lower-dividend-paying firms are favored. On the other hand, a negative relationship may also be expected since institutional investors may prefer firms that retain earnings for future reinvestment purposes rather than pay high levels of dividends, possibly due, in part, to dual-taxation on dividend income that might have caused institutions to prefer low/no dividend (Tong & Ning, 2004). Table 2 shows expected signs of the coefficients of the independent/explanatory variables in Eqs. (1) and (2).

Table 2 Expected Signs of the Coefficients of Explanatory Variables

| | Eq. (1) | Eq. (2) |
|---|---|---|
| Dependent Variable | *Q* | INST |
| Explanatory Variable | | |
| *Q* | | + |
| INST | + | |
| SIZE | – | + |
| DEBT | +/– | – |
| FIX | +/– | |
| ROA | | + |
| BETA | | +/– |
| DIV | | +/– |

## Statistical Techniques

All statistical techniques will be performed with the assistance of SPSS software version 11.0. The following sections will describe the statistical techniques adopted for this dissertation.

### The Durbin-Wu-Hausman Test

Previous studies suggest the use of the 2SLS technique when modeling the ownership structure/firm performance relationship because of the endogeneity of ownership structure in the firm. Thus, in this dissertation, the suspicious endogenous variable, institutional ownership, will be tested first for endogeneity before applying the 2SLS technique to the proposed model. The Durbin-Wu-Hausman (DWH) test for checking the endogeneity of INST in Eq. (1) will be performed to justify the use of 2SLS in the equation (Davidson & MacKinnon, 1993). If the DWH test suggests that INST is an endogenous explanatory variable in Eq. (1), meaning it is correlated with the error term of Eq. (1), 2SLS will be applied to estimate the equation; otherwise, OLS estimation alone on Eq. (1) will suffice. In a similar vein, *Q* in Eq. (2) may be an endogenous explanatory variable, and, therefore, the DWH test will also be performed on *Q* to justify the use of 2SLS in the equation.

The DWH test will be performed in two steps using the following sample simultaneous equations (3) and (4).

$$Y_1 = a_0 + a_1*Y_2 + a_2*X_1 + e_1, \quad (3)$$

$$Y_2 = b_0 + b_1*X_2 + b_2*X_3 + e_2, \quad (4)$$

where, $Y_2$ is a suspicious endogenous variable and $Y_1$ is the dependent variable in Eq. (3), $X_1$, $X_2$ and $X_3$ are exogenous variables and $e_1$ and $e_2$ are the error terms. The first step of the DWH test is to perform a regression in which the suspicious endogenous variable (i.e., $Y_2$) regresses against all exogenous variables (i.e., $X_1$, $X_2$, and $X_3$) in the system; or

$$Y_2 = c_0 + c_1*X_1 + c_2*X_2 + c_3*X_3 + e_3, \quad (5)$$

and residuals of Eq. (5), $Y_2$_res, are saved. In the second step, $Y_2$_res is added as an additional independent variable to Eq. (3) and another regression is performed; or

$$Y_1 = d_0 + d_1*Y_2 + d_2*X_1 + d_3Y_2\_res + e_4, \quad (6)$$

If $d_3$, the coefficient of $Y_2$_res, is significantly different from zero in a t-test, meaning $Y_2$ is an endogenous explanatory variable correlating with the error term of Eq. (3), OLS estimation on Eq. (3) is both inconsistent and biased, and, therefore, 2SLS is necessary (Cong, 2004).

Using Eqs. (1) and (2) in this study for illustration, firstly, an OLS regression is run where the suspicious "endogenous" variable, or INST, is regressed against all six exogenous variables in Eqs. (1) and (2), namely SIZE, DEBT, FIX, ROA, BETA and DIV, and the residuals (i.e., INST_res) are saved; or

$$INST = \beta_0 + \beta_1SIZE + \beta_2DEBT + \beta_3FIX + \beta_4ROA + \beta_5BETA + \beta_6DIV, \quad (7)$$

Secondly, INST_res obtained from Eq. (7) is then added to Eq. (1) as an additional independent variable and another OLS regression is run; or

$$Q = \beta_0 + \beta_1 INST + \beta_2 SIZE + \beta_3 DEBT + \beta_4 FIX + \beta_5 INST\_res, \quad (8)$$

If the coefficient of INST_res obtained from Eq. (8), or $\beta_5$, is significantly different from zero in a t-test, the OLS result obtained from Eq. (1) will be both inconsistent and biased, and, therefore, the use of the 2SLS technique is justified and should be applied to Eq. (1) (Cong, 2004). Since the DWH test is not a built-in function of SPSS, manual operation of the DWH test is performed with the assistance of SPSS's linear regression function.

Two-Stage Least Squares Technique

After performing the DWH test, if INST is found to be an endogenous explanatory variable in Eq. (1), the 2SLS technique will be employed in estimating the coefficients in the equation. Similarly, the 2SLS technique will be adopted in Eq. (2) if $Q$ is found to be endogenous. The following simultaneous equations (9) and (10) serve as an example for illustration of the 2SLS technique:

$$Y_1 = \beta_0 + \beta_1 Y_2 + \beta_2 Z_1 + e_1, \quad (9)$$

$$Y_2 = \beta_0 + \beta_1 Y_1 + \beta_2 Z_1 + \beta_3 Z_2 + \beta_4 Z_3 + e_2, \quad (10)$$

where, $Y_2$ is an endogenous explanatory variable in Eq. (9), $Z_1$, $Z_2$ and $Z_3$ are exogenous variables and $e_1$ and $e_2$ are the error terms.

The first stage is to run an OLS regression in which $Y_2$ is the dependent variable and $Z_1$, $Z_2$ and $Z_3$ are the independent variables; or

$$Y_2 = \beta_0 + \beta_1 Z_1 + \beta_2 Z_2 + \beta_3 Z_3 + e_3, \quad (11)$$

and the predicted (fitted) values of $Y_2$, denoted as $\hat{Y}_2$, are obtained from Eq. (11). The first stage serves to find a 2SLS estimator for $Y_2$ (i.e., $\hat{Y}_2$) in Eq. (9) using all exogenous variables (i.e., $X_1$, $X_2$ and $X_3$) as instrumental variables.

In the second stage, of Eq. (9), $Y_2$ is replaced by $\hat{Y}_2$ and another OLS regression is then run on Eq. (9); or

$$Y_1 = \beta_0 + \beta_1 \hat{Y}_2 + \beta_2 Z_1 + e_1, \quad (12)$$

The estimation of the coefficient in Eq. (12) is now both consistent and unbiased (Wooldridge, 2003).

Next, Eqs. (1) and (2) in this dissertation are used for illustration. In the first stage, the predicted (fitted) values of INST, or $\hat{INST}$ (i.e., the 2SLS estimator), are obtained by regressing INST against all exogenous variables in Eqs. (1) and (2)—SIZE, DEBT, FIX, ROA, BETA and DIV; or

$$INST = \beta_0 + \beta_1 SIZE + \beta_2 DEBT + \beta_3 FIX + \beta_4 ROA + \beta_5 BETA + \beta_6 DIV + \varepsilon_1. \quad (13)$$

In the second stage, of Eq. (1), INST is replaced by $\hat{INST}$ and another OLS regression is run on Eq. (1); or

$$Q = \beta_0 + \beta_1 \hat{INST} + \beta_2 SIZE + \beta_3 DEBT + \beta_4 FIX + \varepsilon_1. \quad (14)$$

The estimation of the coefficient in Eq. (14) is then both consistent and unbiased (Wooldridge, 2003).

In SPSS, the 2SLS technique is performed using a built-in 2SLS regression function where three mandatory lists are required for input: the dependent variable, the list of explanatory variables (both exogenous and endogenous), and the entire list of instrumental variables (i.e., all exogenous variables). 2SLS regression output is similar to that for OLS (Wooldridge, 2003).

Assumptions of The Two-Stage Least Squares

The 2SLS technique is not performed without assumptions. Since the 2SLS technique is essentially an OLS regression with a 2SLS estimator performed in two stages, the underlying assumptions that apply to OLS should also be checked when applying the 2SLS technique. The assumption of normality states that the errors (or the dependent variable) has a normal distribution, conditional on the explanatory variables; the assumption of linearity states that there is a straight-line relationship between two variables (where one or both of the variables can be combinations of several variables); and the assumption of homoscedasticity states that the errors in a regression model have constant variance, conditional on the explanatory variables (Tabachnick & Fidell, 2001; Wooldridge, 2003). Under OLS, assumptions such as normality, linearity and

homoscedasticity of residuals can be examined by residuals scatterplots in which one axis is predicted scores of the dependent variable and the other axis is errors of prediction (Tabachnick & Fidell, 2001). The same tool will be applied under 2SLS in this study to examine normality, linearity and homoscedasticity.

Another relevant assumption for the 2SLS technique is the identification issue for the equations. Over-identification or just-identification (exact-identification) of equations is both necessary (i.e., order condition) and sufficient (i.e., rank condition) for the 2SLS technique to produce consistent estimators of the β coefficient (Wooldridge, 2003). The order condition for identification of an equation means that there exists at least as many excluded exogenous variables as there are included endogenous explanatory variables in the equation (Wooldridge, 2003). An equation is over-identified when the number of excluded exogenous variables is larger than that of right-hand endogenous explanatory variables, while an equation is just-identified when the number of excluded exogenous variables is equal to that of right-hand endogenous explanatory variables. On the other hand, the rank condition for identification states that the first equation in a two-equation simultaneous system is identified if, and only if, the second equation includes at least one exogenous variable excluded from the first equation and the coefficient of the excluded exogenous variable is not zero (Wooldridge, 2003).

In this dissertation, $Q$ and INST are the two endogenous variables while the six exogenous variables are SIZE, DEBT, FIX, ROA, BETA and DIV. Eq. (1) is over-identified and Eq. (2) is just-identified, because the number of excluded exogenous variables from the equations is at least as large as the number of right-hand endogenous variables (Wooldridge, 2003). In other words, in Eq. (1), only SIZE, DEBT, and FIX are

included as exogenous explanatory variables, and, therefore, ROA, BETA and DIV are considered three excluded exogenous variables from the equation with INST being the endogenous explanatory variable on the right-hand side of the equation. The number of excluded exogenous variables (i.e., ROA, BETA and DIV) is larger than that of right-hand endogenous variable (i.e., INST), resulting in over-identification of Eq. (1). Similarly, in Eq. (2), FIX is not included and therefore is considered an excluded exogenous variable while $Q$ is the endogenous one. The number of excluded exogenous variables (i.e., FIX) is equal to that of right-hand endogenous variables (i.e., $Q$), resulting in just-identification of Eq. (2). Furthermore, the rank condition for identification for Eq. (1) can be checked only after data analysis if at least one of the excluded exogenous variables from Eq. (1) has a non-zero coefficient in Eq. (2). That is, the rank condition for identification is met for Eq. (1) if at least one of the coefficients for ROA, BETA and DIV in Eq. (2) is non-zero. Similarly, the rank condition for identification is met for Eq. (2) if the coefficient for FIX in Eq. (1) is not zero.

Multicollinearity

One of the underlying assumptions for linear regression models states that there is no exact linear relationship between the independent variables in the equation. However, the issue of multicollinearity is said to exist when two or more independent variables are approximately linearly-related in the sample data (Kennedy, 2003). Although the OLS estimator in the presence of multicollinearity remains unbiased and the R-squared is unaffected, the variances of the OLS estimates of the parameters of the collinear variables are quite large (Kennedy, 2003). The variance of the coefficient for $X_j$ is calculated as:

$$\mathrm{Var}(\beta_j) = \frac{\sigma^2}{SST_j(1-R_j^2)}, \quad (15)$$

where, $\sigma^2$ is the error variance, $SST_j$ is the total sample variations in variable $X_j$ and $R_j^2$ is the variations in $X_j$ explained by other independent variables. When serious multicollinearity exists, larger variances of the OLS estimates of the parameters will result in smaller t statistics and make it harder to reject the null hypothesis. In other words, it will be more likely to commit a Type II error under serious multicollinearity (Neter, Kutner, Nachtsheim & Wasserman, 1996). Multicollinearity is not deemed a "problem" by some scholars since it can be eliminated by increasing sample size; thus, increasing $SST_j$ in Eq. (15). More importantly, the parameter of interest may be uncorrelated with other collinear variables that will not affect the variance of the interested parameter.

Nevertheless, multicollinearity can be more serious with 2SLS than OLS (Wooldridge, 2003), and this can be illustrated using Eqs. (13) and (14). $\hat{INST}$ are predicted (fitted) values obtained from Eq. (13) that is essentially a linear combination of all six exogenous variables (SIZE, DEBT, FIX, ROA, BETA and DIV). That is, the variations in $\hat{INST}$ can be perfectly explained by the six exogenous variables. $\hat{INST}$, acting as a 2SLS estimator in place of INST, will be possibly correlated with SIZE, DEBT, and FIX in Eq. (14) because $\hat{INST}$ are predicted (fitted) values from Eq. (13). Thus, serious multicollinearity in Eq. (14) may exist. However, there is no guideline for how multicollinearity in a 2SLS regression model can be detected. No statistics such as

variance inflation factors (VIF), condition index or Pearson correlation matrix are available under the 2SLS function in SPSS.

## Sample and Data

For this study, the sample consists of firms from the three major hospitality sectors—restaurant, casino and hotel. All sample firms were firstly identified with their primary North American Industry Classification System (NAICS) code numbers. Specifically, the restaurant sector includes firms under NAICS code number 722110 (i.e., Full-service restaurants) or 722211 (i.e., Limited-service restaurants); the casino sector covers firms under NAICS code number 713210 (i.e., Casinos) or 721120 (i.e., Casino Hotels); and the hotel sector includes firms with NAICS code number 721110 (Hotels & Motels). Secondly, the identified firms whose institutional investors' investment portfolio meeting the SEC's Form 13F reporting requirements (i.e., portfolio fair market value equal to or over $100 million) between 1999-2003 were targeted and pooled. The sample was then narrowed depending upon accounting and financial information and institutional ownership data availability from the data sources.

The choice of period 1999-2003 for this dissertation was based on two considerations. Firstly, there are not as many publicly traded firms in the hospitality industry as in other manufacturing industries. The number of firm observations in one single year may not be able to produce any meaningful or valid results when employing statistical techniques such as linear regression. Pooled data of more than one year were thus used for the empirical investigation in this study. Secondly, a preliminary data screening shows that institutional ownership information for hospitality firms before 1999 was relatively

limited. Therefore, a pooled sample of hospitality firms in time period of five years between 1999-2003 was adopted.

The accounting and financial information of those firms for 1999-2003 was obtained from Standard & Poor's COMPUSTAT, Center for Research in Security Prices (CRSP), and institutional ownership information for the same period was gathered from Thomson Financial. Accounting information that was collected is based upon the variables included in the proposed model. A list of accounting and financial variables collected from Standard & Poor's COMPUSTAT database is shown in Table 3.

Table 3 Variables Collected from S&P's COMPUSTAT between 1999-2003

| Variable | Description | Acronym |
|---|---|---|
| DATA6 | Total Assets (MM$) | CST6 |
| DATA9 | Long-term Debt (MM$) | CST9 |
| DATA12 | Net Sales (MM$) | CST12 |
| DATA20 | Income before Extraordinary Items Adjusted for Common Stock Equivalents (MM$) | CST20 |
| DATA21 | Common Dividends (MM$) | CST21 |
| DATA24 | Year-end Stock Close Price ($&C) | CST24 |
| DATA25 | Common shares Outstanding (MM) | CST25 |
| DATA30 | Capital Expenditures on Property, Plant & Equipment (MM$) | CST30 |
| DATA34 | Debt in Current Liabilities (MM$) | CST34 |
| DATA60 | Total Common Equity (MM$) | CST60 |
| DATA74 | Deferred Taxes on Balance Sheet (MM$) | CST74 |
| DATA172 | Net Income (MM$) | CST172 |

Note: MM is millions; MM$ is millions of dollars; $&C is dollars and cents.

Table 4 shows computation of the variables included in the proposed model [i.e., Eqs. (1) and (2)] using COMPUSTAT data collected for this dissertation. Year-end BETA values of the sample firms were collected from CRSP.

Table 4 Computation of the Variables in the Proposed Model

| Variable | COMPUSTAT data used in computation | Eq. (1) | Eq. (2) |
|---|---|---|---|
| Proxy $Q$ | $\frac{(CST6 + (CST24 \times CST25) - (CST60 + CST74))}{CST6}$ | √ | √ |
| SIZE | log(CST6) | √ | √ |
| DEBT | $\frac{(CST9 + CST34)}{CST6}$ | √ | √ |
| FIX | $\frac{(CST30)}{(CST12)}$ | √ | |
| ROA | $\frac{(CST172)}{(CST6)}$ | | √ |
| DIV | $\frac{(CST21)}{(CST20)}$ | | √ |

Note: √ represents inclusion of the variable in either Eqs. (1) or (2).

Institutional ownership data collected includes manager name (mgrname), manager number (mgrno), report date (rdate), CUSIP, shares held at report date (shares), stock name (stkname), ticker symbol (ticker), shares outstanding in 1000s at the end of quarter (shrout2), and share price at the end of quarter (prc). For each hospitality firm, the institutional ownership percentage at the end of each year from 1999-2003 (if available)

was calculated by dividing the number of shares held by institutional investors by the number of shares outstanding at the end of the fourth quarter.

## Summary

A proposed simultaneous equations model investigating the institutional ownership/firm performance relationship in the hospitality industry was presented with justifications on variable selection and on possible statistical technique adoption in this chapter. After data collection on the identified sample firms, the statistical techniques that were discussed in this chapter can be deployed and results will be presented in the next chapter.

# CHAPTER 4

## FINDINGS OF THE STUDY

The first section of this chapter provides the descriptive statistics of all variables used in this dissertation; further, a pair-wise correlation matrix is presented. The second section presents relevant data analysis results, including the DWH test and regression analyses for the three hospitality sectors as described in Chapter Three. The three hypotheses of this dissertation will then be tested and the underlying assumptions of relevant regression analysis will be checked in the last section.

### Descriptive Statistics

#### The Restaurant Sector

Ninety-nine restaurant firms were first identified by their individual NAICS code number (i.e., 722110 & 722211). Firms with insufficient accounting and financial data needed for this study and/or lacking institutional ownership information between 1999-2003 were excluded. Five years (1999-2003) of data were pooled for a total of 284 firm/year observations from 65 restaurant firms, including 50 full-service restaurant firms (NAICS code 722110) and 15 limited-service ones (NAICS code 722211). Sample descriptive statistics of the variables are presented in Table 5.

Table 5 Descriptive Statistics for the Restaurant Sector

| Variable | *N* | Mean | Std. Dev. | Max | Min |
|---|---|---|---|---|---|
| *Q* | 284 | 1.517 | 0.767 | 4.531 | 0.470 |
| INST | 284 | 0.412 | 0.318 | 1.255 | 0.000 |
| SIZE | 284 | 8.249 | 0.741 | 10.407 | 6.572 |
| DEBT | 284 | 0.275 | 0.209 | 1.000 | 0.000 |
| FIX | 284 | 0.108 | 0.251 | 4.167 | 0.005 |
| ROA | 284 | 0.032 | 0.094 | 0.227 | -0.573 |
| BETA | 284 | 0.366 | 0.389 | 1.546 | -0.785 |
| DIV | 284 | 0.036 | 0.110 | 0.907 | 0.000 |

Proxy *Q* ranges from 0.470 to 4.531, with a mean of 1.517. Two hundred and ten out of the 284 firm/year observations, or 73.9% of the pooled restaurant sample, had a proxy *Q* of larger than one (see Figure 2). From an individual firm perspective, 53 out of the 65 restaurant firms, or 81.5%, had an average proxy *Q* of larger than one (see Figure 3). When a firm is worth more than its value based on what it would cost to rebuild it, or when Tobin's *Q* is larger than one, excess profits are being earned, and these profits are above and beyond the level that is necessary to keep the firm in the industry (Lindenberg & Ross, 1981). In other words, the majority of the restaurant firms in the sample have performed relatively well as measured by their larger than one proxy *Q*s during 1999-2003.

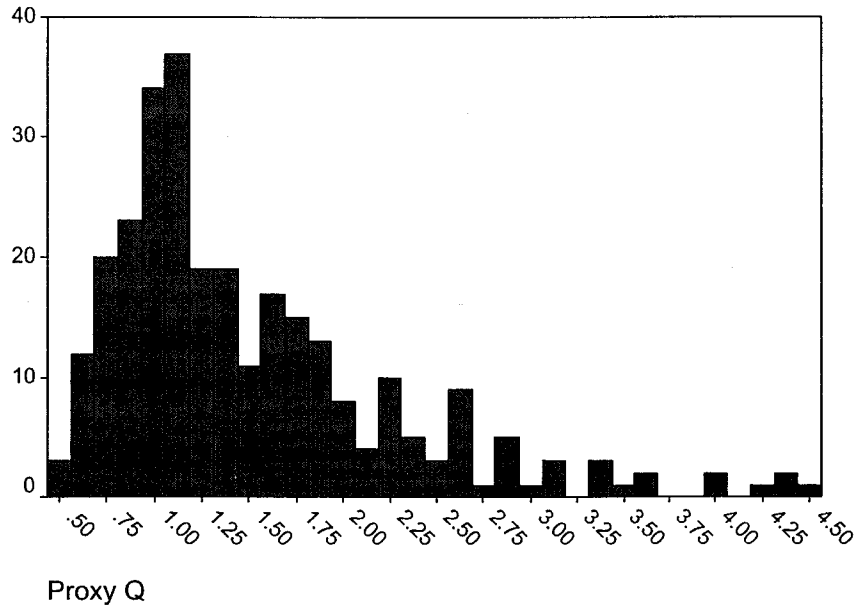


Figure 2. Histogram of Proxy $Q$ for the Restaurant Sector (Firm/Year)

The average percentage of institutional ownership (INST) is 41.2%, with a maximum of 125.5% and a minimum of 0.006%. In the case of short sales by institutional investors where some of the firm shares are owned by more than one party, it is possible that institutional ownership exceeds 100% of the firm (Asquith, Pathak & Ritter, 2005). One hundred and sixty-two out of the 284 firm/observations, or 57.0% of the pooled restaurant sample, had less than 50% institutional ownership during 1999-2003 (see Figure 4). From an individual firm perspective, 39 out of the 65 restaurant firms had an average of less than 50% institutional ownership during 1999-2003 (see Figure 5).

Another notable characteristic is the 27.5% mean debt ratio. This implies that the restaurant firms rely less on debt financing and more on equity capital. Two hundred and fifty out of the 284 restaurant firm/year observations had a debt ratio of less than 50% (see Figure 6). From an individual firm perspective, fifty-eight, or almost 90%, of the 65 restaurant firms had an average debt ratio of less than 50% (see Figure 7).

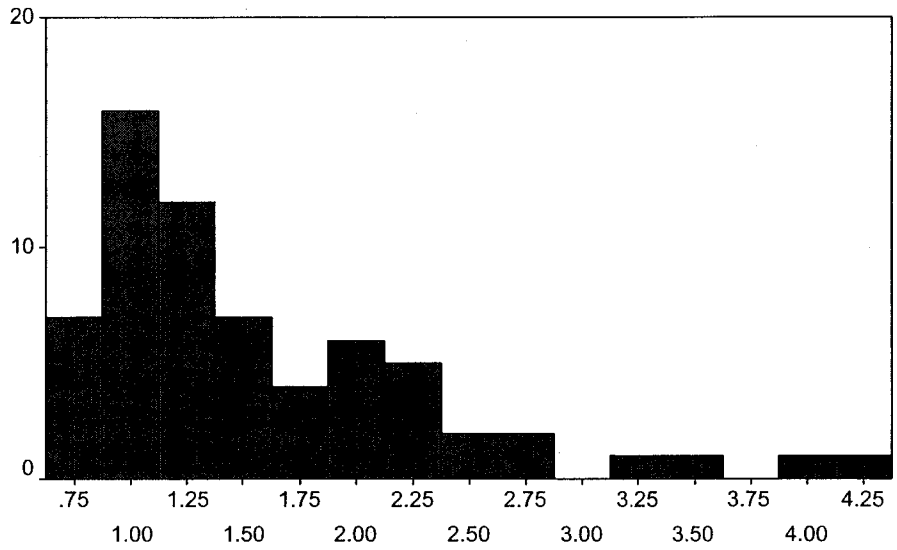


Figure 3. Histogram of Proxy $Q$ for the Restaurant Sector (Firm Average)

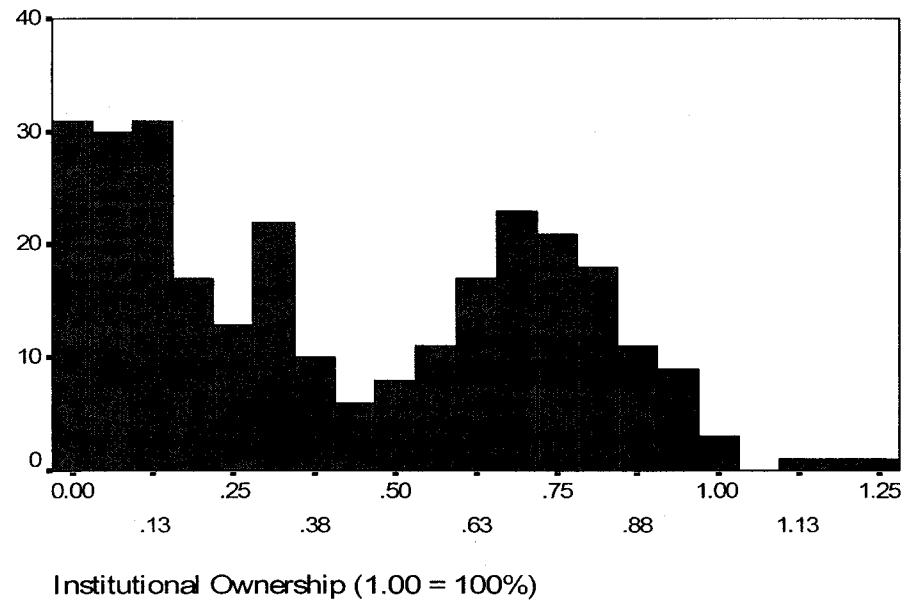


Figure 4. Histogram of Institutional Ownership for the Restaurant Sector (Firm/Year)

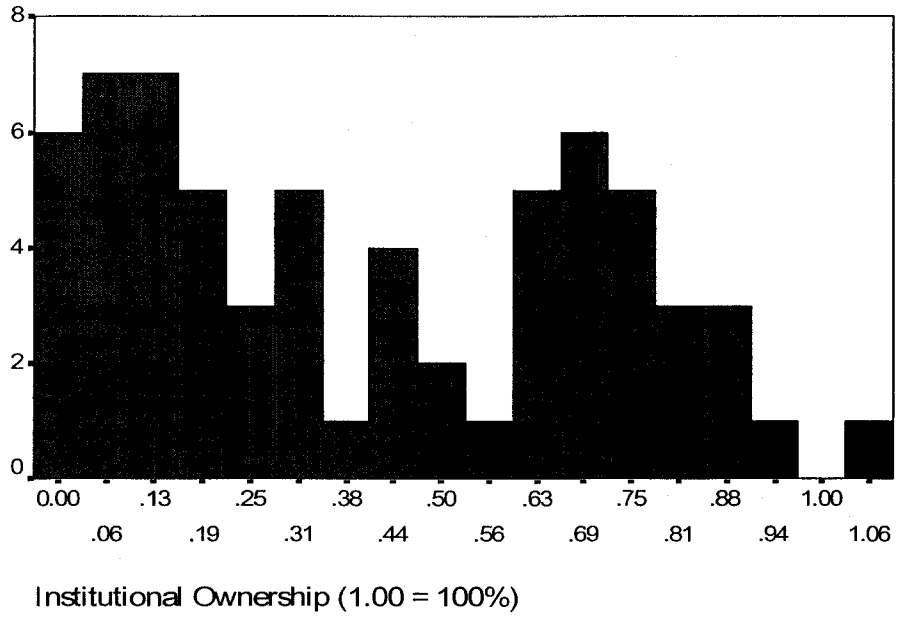


Figure 5. Histogram of Institutional Ownership for the Restaurant Sector (Firm Average)

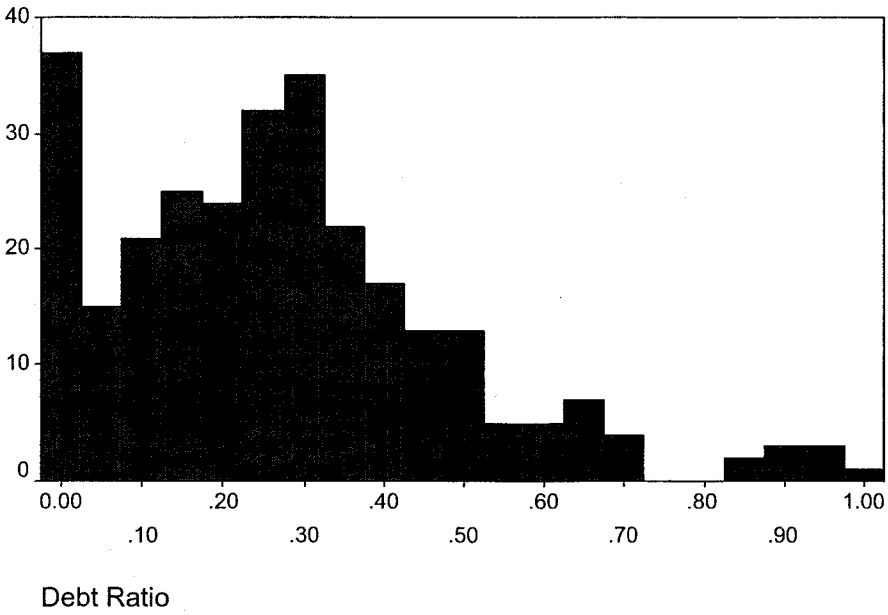


Figure 6. Histogram of Debt Ratio for the Restaurant Sector (Firm/Year)

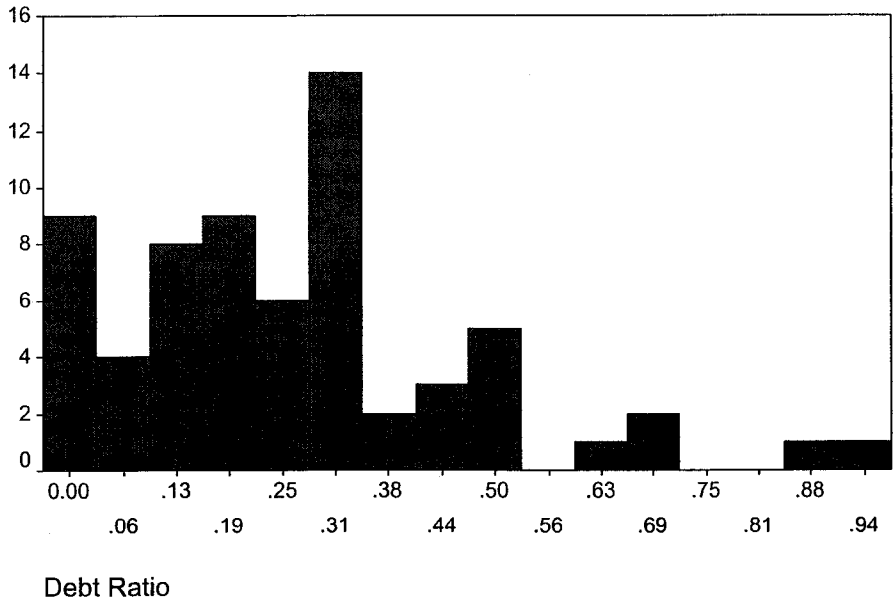


Figure 7. Histogram of Debt Ratio for the Restaurant Sector (Firm Average)

## The Casino Sector

Fifty-three casino firms were initially identified by their individual NAICS code number (i.e., 721120 & 713210). Firms with insufficient accounting and financial data and/or lacking institutional ownership information between 1999-2003 were eliminated. Five years (1999-2003) of data were pooled for a total of 106 firm/year observations from 24 casino firms, including 18 casino hotel firms (NAICS code 721120) and six casino firms (NAICS code 713210). Sample descriptive statistics for the variables are presented in Table 6.

Proxy $Q$ ranges from 0.414 to 3.086, with a mean of 1.139. Sixty-nine out of the 106 firm/year observations, or 65.1% of the pooled casino sample, had a proxy $Q$ of larger than one (see Figure 8). From an individual firm perspective, 17 out of the 24 casino firms, or 70.8% of the firms, had an average proxy $Q$ of larger than one (see Figure 9). As with the restaurant sector, the majority of the casino firms in the sample seem to have

performed relatively well as measured by their larger than one proxy *Q*s during 1999-2003.

Table 6 Descriptive Statistics for the Casino Sector

| Variable | *N* | Mean | Std. Dev. | Max | Min |
|---|---|---|---|---|---|
| *Q* | 106 | 1.139 | 0.435 | 3.086 | 0.414 |
| INST | 106 | 0.466 | 0.278 | 0.872 | 0.001 |
| SIZE | 106 | 8.996 | 0.741 | 10.111 | 7.391 |
| DEBT | 106 | 0.526 | 0.221 | 1.000 | 0.000 |
| FIX | 106 | 4.516 | 39.914 | 407.65 | 0.004 |
| ROA | 106 | 0.019 | 0.044 | 0.157 | -0.105 |
| BETA | 106 | 0.599 | 0.545 | 1.930 | -0.678 |
| DIV | 106 | 0.041 | 0.207 | 1.638 | 0.000 |

The average percentage of institutional ownership (INST) is 46.6%, with a maximum of 87.2% and a minimum of 0.1%. Fifty-seven out of the 106 firm/year observations, or 53.8% of the pooled casino sample, had less than 50% institutional ownership during 1999-2003 (see Figure 10). From an individual firm perspective, 13 out of the 24 casino firms had an average of less than 50% institutional ownership during 1999-2003 (see Figure 11).

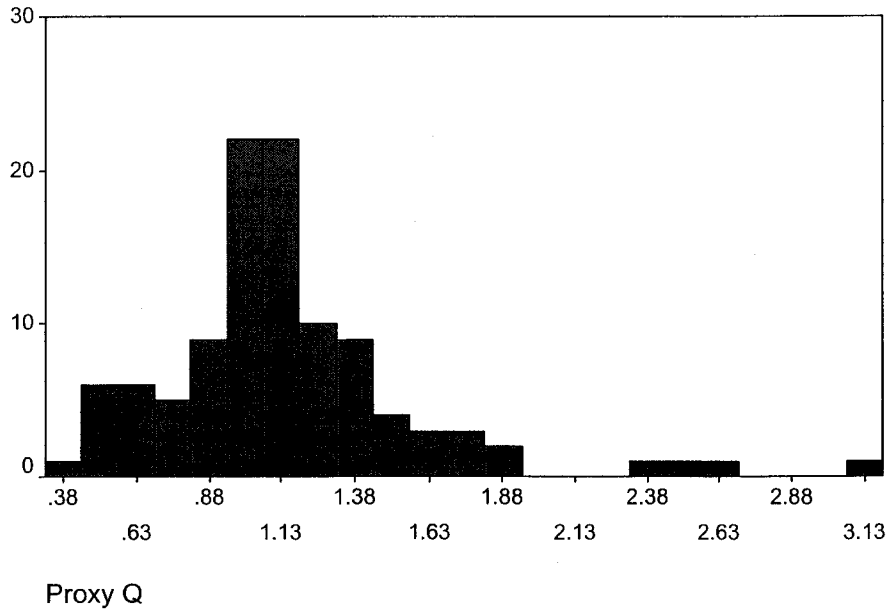


Figure 8. Histogram of Proxy $Q$ for the Casino Sector (Firm/Year)

Another noteworthy characteristic is the 52.6% mean debt ratio in the casino sample. It shows that the casino firms in this study, on average, rely slightly more on debt financing than on equity capital. Sixty-two out of the 106 casino firm/year observations had a debt ratio of more than 50% (see Figure 12). Alternatively from an individual firm perspective, 13, or 54.2%, of the casino firms had an average debt ratio of more than 50% (see Figure 13).

The mean for FIX is 451.6%. This was due to the inclusion of the Wynn Resorts (NASDAQ: WYNN) which opened in late April 2005. The Wynn Resorts provided two firm/year observations (2002 & 2003) and its inclusion did not affect the results of this dissertation significantly during preliminary data analysis; therefore, their data were not excluded from the study. The mean FIX reduces to 13.6% with a standard deviation of 20.7% if the Wynn data were excluded.

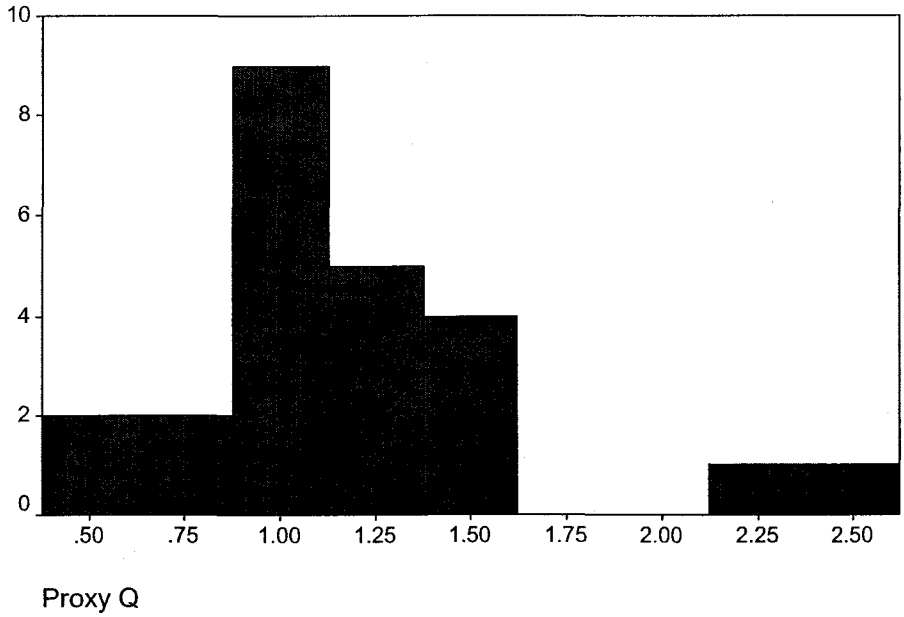


Figure 9. Histogram of Proxy $Q$ for the Casino Sector (Firm Average)

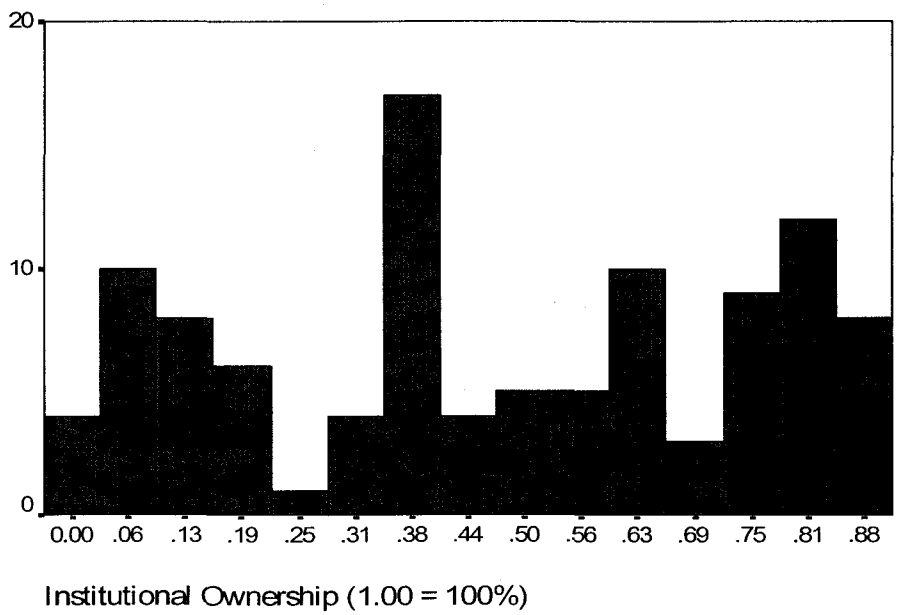


Figure 10. Histogram of Institutional Ownership for the Casino Sector (Firm/Year)

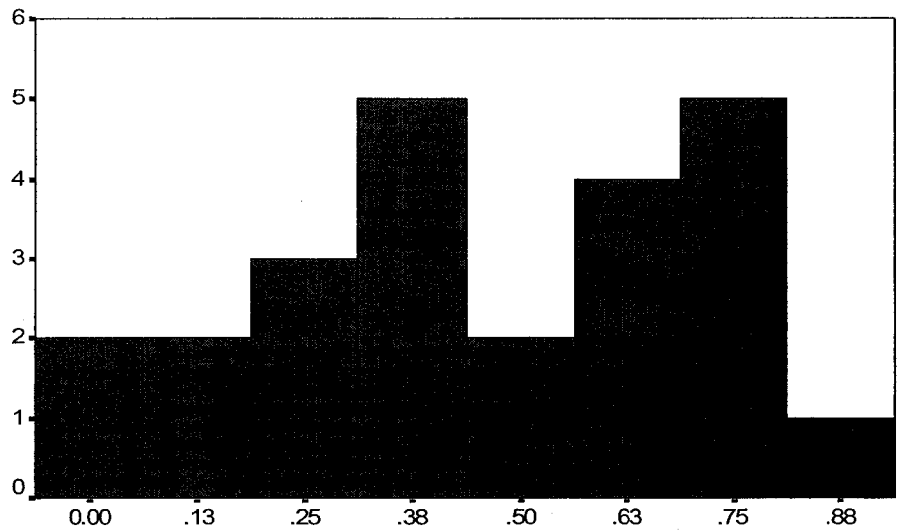


Figure 11. Histogram of Institutional Ownership for the Casino Sector (Firm Average)

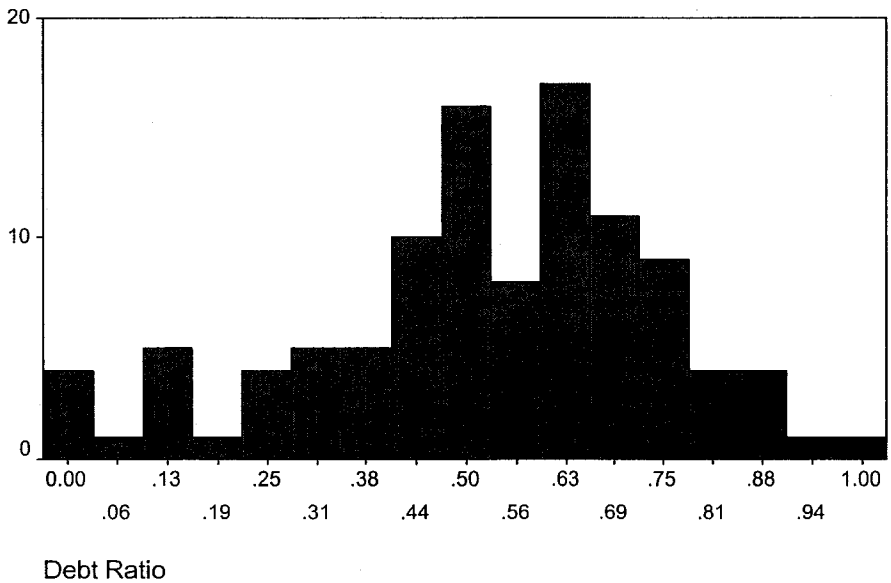


Figure 12. Histogram of Debt Ratio for the Casino Sector (Firm/Year)

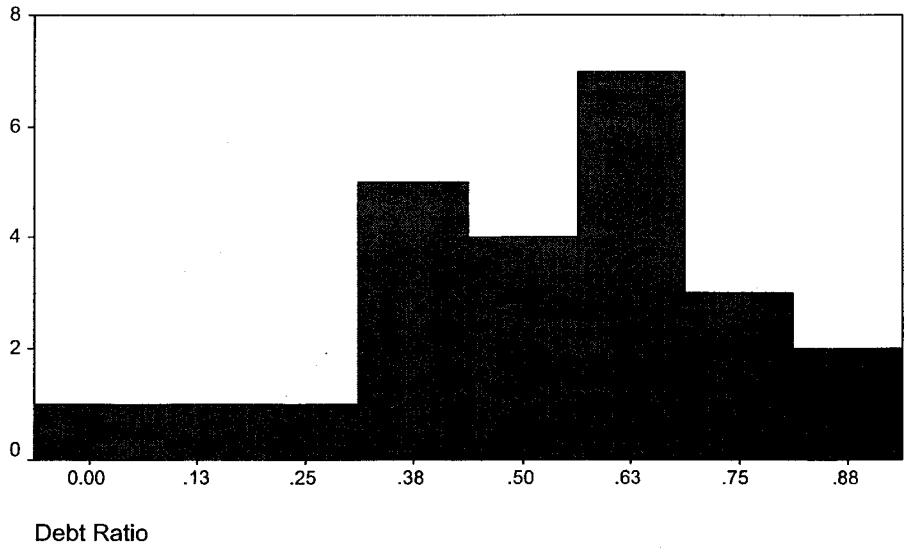


Figure 13. Histogram of Debt Ratio for the Casino Sector (Firm Average)

## The Hotel Sector

Twenty-eight hotel firms were originally targeted by their individual NAICS code (721110). Firms with insufficient accounting and financial data and/or lacking institutional ownership information between 1999-2003 were excluded. Five years (1999-2003) of data were pooled for a total of 75 firm/year observations from 19 hotel firms. Sample descriptive statistics for the variables are presented in Table 7.

Proxy $Q$ ranges from 0.625 to 3.659, with a mean of 1.121. Forty-one out of the 75 firm/year observations, or 54.7% of the pooled hotel sample, had a proxy $Q$ of larger than one (see Figure 14). From an individual firm perspective, only nine out of the 19 casino firms, or 47.4% of the firms, had an average proxy $Q$ of larger than one (see Figure 15). Different from the restaurant and casino sectors, only about half of the hotel firms in the sample performed well during the time frame of this study as measured by their larger than one proxy $Q$s during 1999-2003.

The average percentage of institutional ownership (INST) is 43.9%, with a maximum of 94.1% and a minimum of 5.8%. Forty-eight out of the 75 firm/year observations, or 64% of the pooled hotel sample, had less than 50% institutional ownership during 1999-2003 (see Figure 16). From an individual firm perspective, 12 out of the 19 hotel firms had an average of less than 50% institutional ownership during 1999-2003 (see Figure 17).

Table 7 Descriptive Statistics for the Hotel Sector

| Variable | *N* | Mean | Std. Dev. | Max | Min |
|---|---|---|---|---|---|
| *Q* | 75 | 1.121 | 0.568 | 3.659 | 0.625 |
| INST | 75 | 0.439 | 0.215 | 0.941 | 0.058 |
| SIZE | 75 | 9.013 | 0.542 | 10.073 | 7.992 |
| DEBT | 75 | 0.419 | 0.211 | 0.950 | 0.102 |
| FIX | 75 | 0.185 | 0.256 | 1.872 | 0.000 |
| ROA | 75 | 0.012 | 0.081 | 0.491 | -0.199 |
| BETA | 75 | 0.713 | 0.504 | 2.569 | -0.188 |
| DIV | 75 | 0.276 | 1.269 | 10.310 | 0.000 |

The 41.9% mean debt ratio in the hotel sample shows that the hotel firms in this study, on average, rely less on debt financing than on equity capital. Twenty out of the 75 hotel firm/year observations had a debt ratio of less than 50% (see Figure 18). Alternatively, 14, or 73.7%, of the hotel firms had an average debt ratio of less than 50% (see Figure 19).

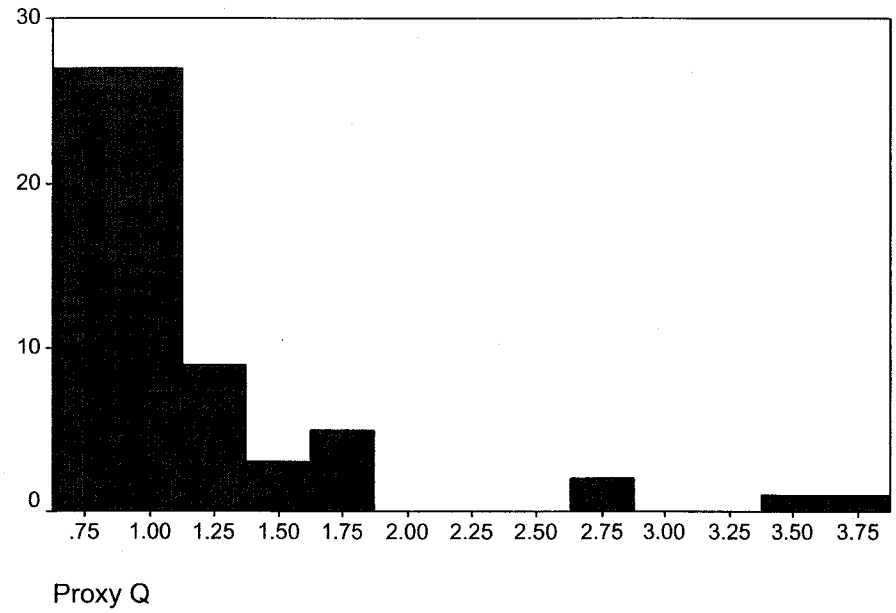


Figure 14. Histogram of Proxy $Q$ for the Hotel Sector (Firm/Year)

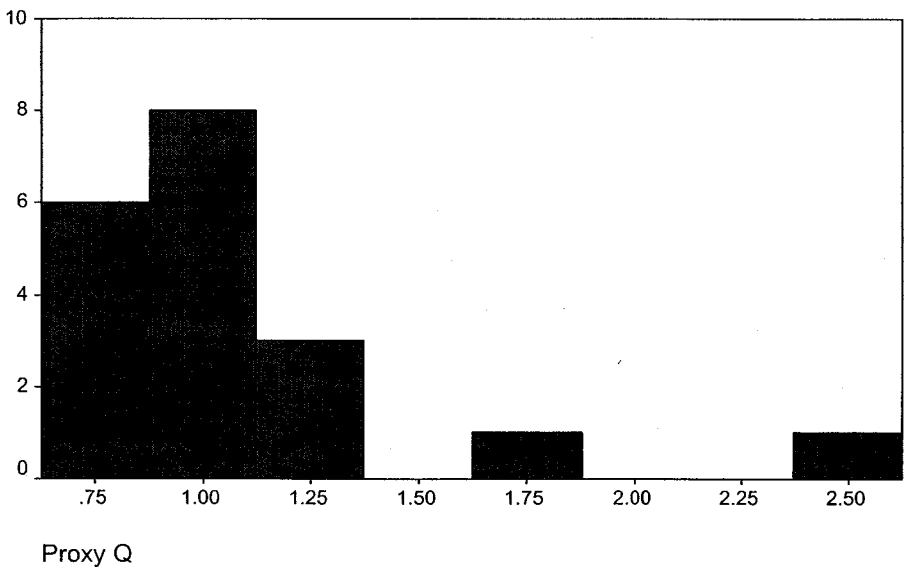


Figure 15. Histogram of Proxy $Q$ for the Hotel Sector (Firm Average)

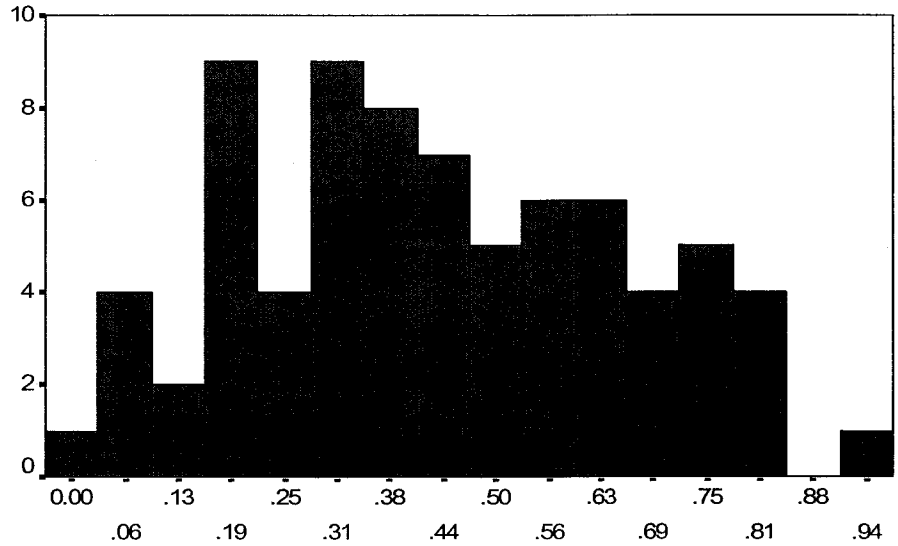


Figure 16. Histogram of Institutional Ownership for the Hotel Sector (Firm/Year)

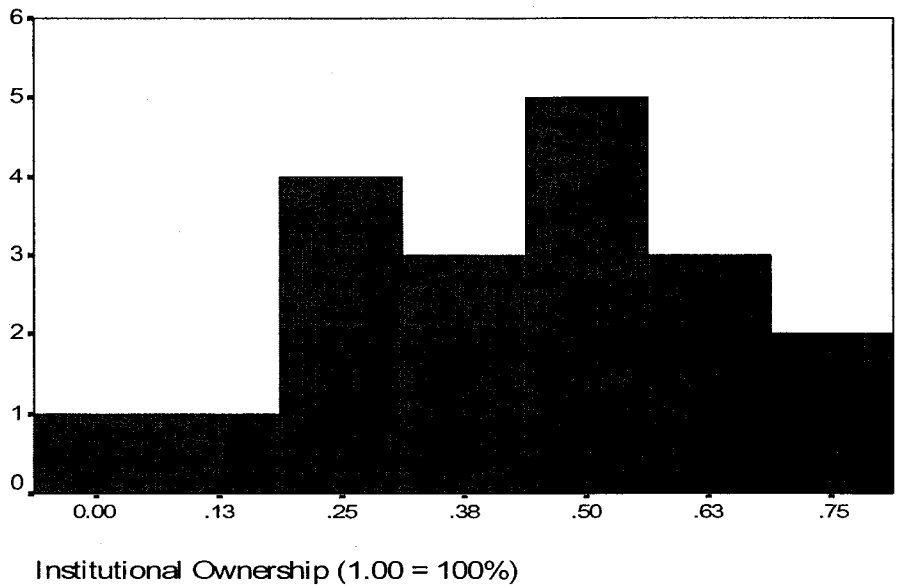


Figure 17. Histogram of Institutional Ownership for the Hotel Sector (Firm Average)

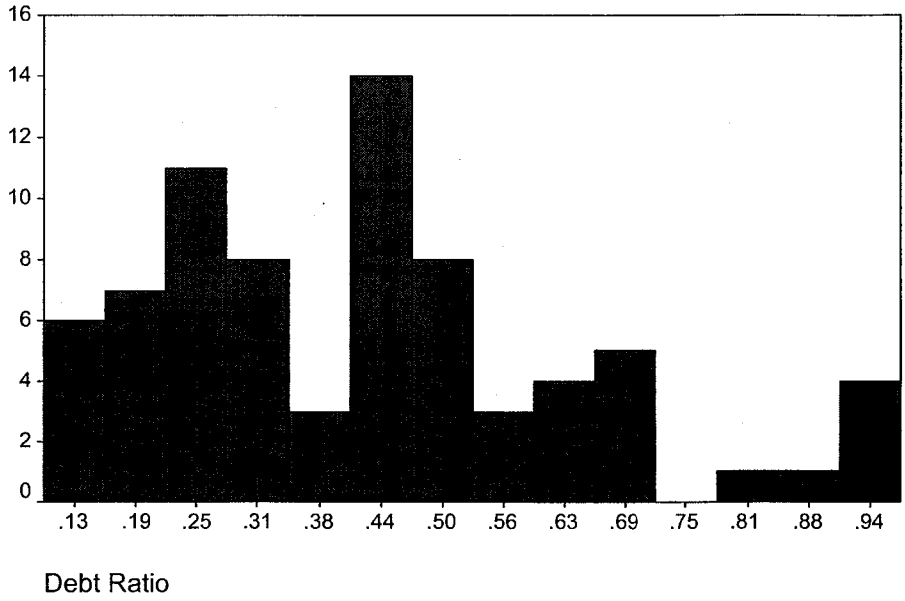


Figure 18. Histogram of Debt Ratio for the Hotel Sector (Firm/Year)

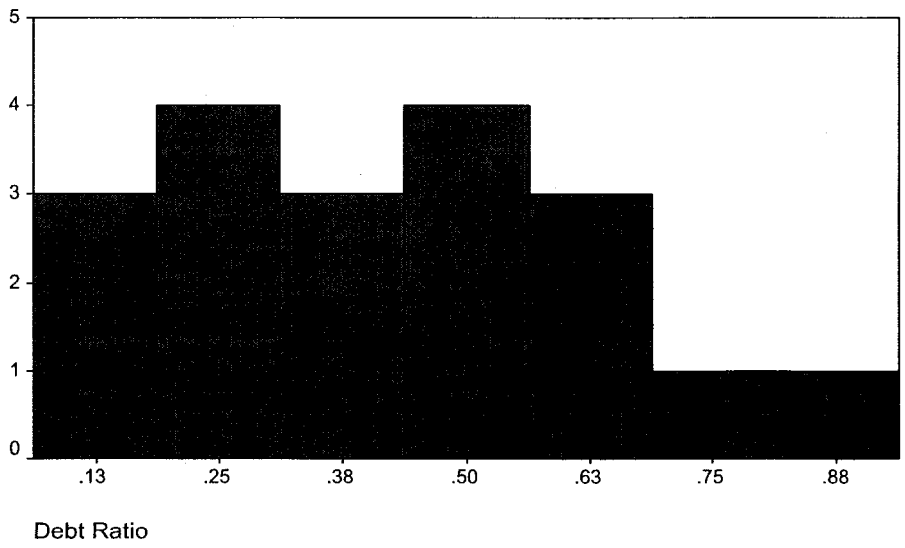


Figure 19. Histogram of Debt Ratio for the Hotel Sector (Firm Average)

## Correlation Matrix

Table 8 shows the correlation matrix of the variables used in the restaurant sector. The 0.602 correlation coefficient between INST and proxy *Q* suggests a possible relationship between the two from either direction. The 0.661 correlation coefficient between INST and SIZE implies that firm size may be an important factor in determining institutional ownership. The remaining correlation coefficients indicate moderate to low inter-correlation among the other variables.

Table 9 shows the correlation matrix of the variables used in the casino sector. The low 0.101 correlation coefficient between INST and proxy *Q* does not show a likely relationship between the two. Again, the 0.606 correlation coefficient between INST and SIZE indicates that firm size may play an important role in determining institutional ownership. The remaining correlation coefficients, except those between SIZE and BETA, indicate moderate to low inter-correlation among the other variables.

Table 8 Correlation Matrix of the Variables Used in the Restaurant Sector

| | INST | Proxy *Q* | SIZE | DEBT | FIX | ROA | DIV | BETA |
|---|---|---|---|---|---|---|---|---|
| INST | 1 | | | | | | | |
| Proxy *Q* | 0.602** | 1 | | | | | | |
| SIZE | 0.661** | 0.333** | 1 | | | | | |
| DEBT | -0.305** | -0.254** | 0.087 | 1 | | | | |
| FIX | 0.036 | 0.271** | -0.099 | -0.094 | 1 | | | |
| ROA | 0.442** | 0.337** | 0.312** | -0.160** | -0.084 | 1 | | |
| DIV | 0.067 | -0.081 | 0.302** | -0.115 | -0.046 | 0.099 | 1 | |
| BETA | 0.373** | 0.303** | 0.495** | -0.025 | 0.087 | 0.168** | 0.112 | 1 |

Note: ** represents the 0.01 significance level.

Table 9 Correlation Matrix of the Variables Used in the Casino Sector

| | INST | Proxy $Q$ | SIZE | DEBT | FIX | ROA | DIV | BETA |
|---|---|---|---|---|---|---|---|---|
| INST | 1 | | | | | | | |
| Proxy $Q$ | 0.101 | 1 | | | | | | |
| SIZE | 0.606** | 0.062 | 1 | | | | | |
| DEBT | -0.053 | 0.348** | 0.222* | 1 | | | | |
| FIX | -0.022 | 0.134 | 0.035 | -0.086 | 1 | | | |
| ROA | 0.110 | 0.339** | -0.117 | -0.318** | -0.118 | 1 | | |
| DIV | 0.272** | 0.023 | 0.300** | -0.072 | -0.024 | 0.009 | 1 | |
| BETA | 0.451** | 0.100 | 0.609** | 0.201* | 0.093 | -0.055 | 0.280** | 1 |

Note: ** and * represent the 0.01 and 0.05 significance levels, respectively.

Table 10 Correlation Matrix of the Variables Used in the Hotel Sector

| | INST | Proxy $Q$ | SIZE | DEBT | FIX | ROA | DIV | BETA |
|---|---|---|---|---|---|---|---|---|
| INST | 1 | | | | | | | |
| Proxy $Q$ | 0.253* | 1 | | | | | | |
| SIZE | 0.340** | 0.146 | 1 | | | | | |
| DEBT | -0.332** | -0.309** | -0.213 | 1 | | | | |
| FIX | -0.266* | -0.216 | -0.069 | -0.026 | 1 | | | |
| ROA | 0.203 | 0.321** | 0.066 | -0.252* | -0.024 | 1 | | |
| DIV | -0.207 | -0.012 | 0.233* | -0.172 | 0.073 | 0.036 | 1 | |
| BETA | 0.377** | 0.263* | 0.572** | 0.251* | -0.099 | 0.081 | -0.072 | 1 |

Note: ** and * represent the 0.01 and 0.05 significance levels, respectively.

Table 10 shows the correlation matrix of the variables used in the hotel sector. The low 0.253 correlation coefficient between Proxy $Q$ and INST does not indicate a strong

relationship between the two from either direction. The remaining correlation coefficients indicate moderate to low inter-correlation among the other variables.

## Results of the Durbin-Wu-Hausman Test

As aforementioned, in a system containing interdependent endogenous variables, the 2SLS technique is preferred over OLS as the latter may result in biased and inconsistent parameter estimates (Wooldridge, 2003). The DWH test on INST in the firm performance equation [i.e., Eq. (1)] and on proxy $Q$ in the institutional ownership equation [i.e., Eq. (2)], respectively, was performed in the restaurant, casino and hotel sectors to justify the need and the adoption of 2SLS in either Eq. (1) or Eq. (2), or both.

As shown in Table 11, the DWH test results show that the coefficient of INST_res in the restaurant sector is significantly different from zero ($t = -3.644$, $p = 0.000$) at the 0.01 significance level. The results not only echo previous research treating ownership structure (e.g., managerial ownership, institutional ownership and blockholder ownership) as an endogenous variable when modeling its relationship with firm performance (Agrawal & Knoeber, 1996; Cho, 1998; Demsetz & Lehn, 1985; Demsetz & Villalonga, 2001; Holderness et al., 1999; Loderer & Martin, 1997; McConnell & Servaes, 1990) but also justify the need for 2SLS in Eq. (1) and inclusion of the endogenous institutional ownership variable in a simultaneous equations system in the restaurant sector. On the other hand, the DWH test results in Table 12 show that the coefficient of $Q$_res is not significantly different from zero ($t = 0.007$, $p = 0.995$). This suggests that applying OLS in Eq. (2) for the restaurant sector is sufficient to produce consistent and unbiased regression coefficients.

Table 11 Results of the DWH Test for Endogeneity of INST for the Restaurant Sector

| Dependent Variable *Q* | t statistics | *p* value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | 4.409 | 0.000 |
| INST | 6.958 | 0.000 |
| SIZE | -3.448 | 0.001 |
| DEBT | 2.123 | 0.035 |
| FIX | 4.346 | 0.000 |
| INST_res | -3.644 | 0.000 |

Table 12 Results of the DWH Test for Endogeneity of Proxy *Q* for the Restaurant Sector

| Dependent Variable INST | t statistics | *p* value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | -12.166 | 0.000 |
| *Q* | 2.323 | 0.021 |
| SIZE | 10.951 | 0.000 |
| ROA | 3.025 | 0.003 |
| BETA | -0.613 | 0.541 |
| DEBT | -5.910 | 0.000 |
| DIV | -2.967 | 0.003 |
| *Q*_res | 0.007 | 0.995 |

As shown in Table 13, the DWH test results show that the coefficient of INST_res in the casino sector is significantly different from zero (t = -4.681, $p$ = 0.000) at the 0.01 significance level. Again the endogeneity of institutional ownership is evidenced and the application of 2SLS in Eq. (1) is justified in the casino sector. The DWH test results in Table 14 show that the coefficient of $Q$_res is not significantly different from zero (t = 0.690, $p$ = 0.492). This indicates that applying OLS in Eq. (2) for the casino sector is sufficient to produce consistent and unbiased regression coefficients.

Table 13 Results of the DWH Test for Endogeneity of INST for the Casino Sector

| Dependent Variable $Q$ | t statistics | $p$ value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | 5.425 | 0.000 |
| INST | 5.057 | 0.000 |
| SIZE | -4.960 | 0.000 |
| DEBT | 6.673 | 0.000 |
| FIX | 3.611 | 0.000 |
| INST_res | -4.681 | 0.000 |

Table 14 Results of the DWH Test for Endogeneity of Proxy $Q$ for the Casino Sector

| Dependent Variable INST | t statistics | $p$ value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | -4.053 | 0.000 |
| $Q$ | -0.342 | 0.733 |
| SIZE | 5.682 | 0.000 |
| ROA | 1.074 | 0.286 |
| BETA | 1.431 | 0.156 |
| DEBT | -0.601 | 0.549 |
| DIV | 0.721 | 0.473 |
| $Q$_res | 0.690 | 0.492 |

As shown in Table 15, the DWH test results show that the coefficient of INST_res in the hotel sector is not significantly different from zero (t = -1.393, $p$ = 0.168). Different from the evidence of the endogeneity of institutional ownership shown in the restaurant and casino sectors, institutional ownership in the hotel sector is deemed exogenous and is not determined inside of the proposed simultaneous equations system. Therefore, the application of 2SLS in Eq. (1) is not justified, and applying OLS in Eq. (1) is sufficient. The DWH test results in Table 16 show that the coefficient of $Q$_res is significantly different from zero (t = -2.146, $p$ = 0.036) at the 0.05 significance level. This suggests that proxy $Q$ acts as an endogenous explanatory variable in Eq. (2) and applying 2SLS in Eq. (2) for the hotel sector is justified.

Table 15 Results of the DWH Test for Endogeneity of INST for the Hotel Sector

| Dependent Variable *Q* | t statistics | *p* value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | 1.213 | 0.229 |
| INST | 1.583 | 0.118 |
| SIZE | -0.478 | 0.634 |
| DEBT | -1.087 | 0.281 |
| FIX | -0.651 | 0.518 |
| INST_res | -1.393 | 0.168 |

Table 16 Results of the DWH Test for Endogeneity of Proxy *Q* for the Hotel Sector

| Dependent Variable INST | t statistics | *p* value |
|---|---|---|
| Independent Variable | | |
| (Intercept) | -2.098 | 0.040 |
| *Q* | 2.236 | 0.029 |
| SIZE | 2.409 | 0.019 |
| ROA | -1.018 | 0.312 |
| BETA | -0.659 | 0.512 |
| DEBT | -0.258 | 0.797 |
| DIV | -2.551 | 0.013 |
| *Q*_res | -2.146 | 0.036 |

In summary, in both the restaurant and casino sectors, applying the 2SLS technique in Eq. (1) is justified and the endogeneity of institutional ownership is evidenced, while OLS application is sufficient in Eq. (2) where proxy $Q$ acts as an exogenous explanatory variable. In the hotel sector, opposite to the two other sectors and to some previous empirical studies, institutional ownership is found to be exogenous, and, therefore, OLS application is sufficient in Eq. (1). While proxy $Q$ is found to be an endogenous explanatory variable in Eq. (2), 2SLS is preferred over OLS.

## Regression Results

The OLS and 2SLS functions in SPSS software were applied in estimating Eqs. (1) and (2) in the simultaneous equations model. Although only one of the two techniques is suitable for testing the firm performance equation [i.e., Eqs. (1)] or the institutional ownership equation [i.e., Eq. (2)] in this study depending upon the DWH tests performed in the previous section, both the OLS and 2SLS regression results of Eqs. (1) and (2) for the restaurant, casino and hotel sectors are presented and interpreted in this section.

### Firm Performance Equation: The Restaurant Sector

Both the OLS and 2SLS results for Eq. (1) are presented in Table 17. For the OLS results, most remarkably, restaurant firm performance as measured by proxy $Q$ is statistically dependent on the percentage of institutional ownership ($t = 9.246$, $p = 0.000$) at the 0.01 significance level. This finding is consistent with previous research where institutional ownership was treated as an exogenous variable (Chaganti & Damanpour, 1991; Han & Suck, 1998; McConnell & Servaes, 1990). In other words, a higher percentage of institutional ownership contributes to better restaurant firm performance.

Table 17 Regression Results of the Performance Equation for the Restaurant Sector

| | Dependent Variable: Firm Performance (Proxy $Q$) | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | $p$ value | VIF | t statistics | $p$ value |
| (Intercept) | 3.578 | 0.000 | | 3.887 | 0.000 |
| INST | 9.246 | 0.000 | 2.309 | 6.134 | 0.000 |
| SIZE | -1.880 | 0.061 | 2.108 | -3.040 | 0.003 |
| DEBT | 0.391 | 0.696 | 1.288 | 1.872 | 0.062 |
| FIX | 4.884 | 0.000 | 1.029 | 3.832 | 0.000 |
| $F$ statistics | 45.506 | 0.000 | | 36.200 | 0.000 |
| Adjusted $R^2$ | 0.385 | | | 0.332 | |

Treating institutional ownership endogenously as justified by the DWH test, the 2SLS results indicate that institutional ownership (INST) is still a significant determinant of restaurant firm performance ($t = 6.134$, $p = 0.000$) at the 0.01 significance level. While this finding is inconsistent with certain previous research that failed to establish a positive and significant relationship between institutional ownership and firm performance in a simultaneous framework (Agrawal & Knoeber, 1996; Craswell et al., 1997; Loderer & Martin, 1997), it confirms Clay's (2001) empirical conclusion that institutional ownership increases firm value, as measured by a proxy for Tobin's $Q$. It is possible that when financial institutions acquire a block of financial interest in restaurant firms, they assume

an efficient monitoring role in the firms in order to fulfill their fiduciary duty; hence, this may result in better restaurant firm performance.

SIZE was included as a control variable and was found to be a significant determinant of restaurant firm performance for both the OLS ($t = -1.880$, $p = 0.061$) result at the 0.1 significance level and the 2SLS ($t = -3.040$, $p = 0.003$) result at the 0.05 significance level. The negative sign suggests that larger restaurant firms tend to be associated with lower proxy $Q$. This finding is consistent with what was expected—that both growth opportunities and Tobin's $Q$ should be lower for larger firms (Agrawal & Knoeber, 1996). This was also evidenced in the restaurant sector in this study.

DEBT was found to be a significant and positive determinant of restaurant firm performance in 2SLS ($t = 1.872$, $p = 0.062$) at the 0.1 significance level but not in OLS. Although restaurant firms are considered less debt dependent with an average debt ratio of 27.5% as shown in Table 5, DEBT serves to capture a value-enhancing effect possibly through corporate tax shields that result in higher values of performance indicators—in this study proxy $Q$ (Morck et al., 1988). Furthermore, while proxy $Q$ reflects how the market prices the firm to some extent (the numerator of proxy $Q$ calculation contains the market value of common equity of the firm), the positive impact of DEBT on proxy $Q$ in the restaurant sector indicates that the market may encourage restaurant firms to utilize more of their debt capacity or increase their debt leverage.

FIX exhibits a positive impact on restaurant firm performance in both the OLS ($t = 4.884$, $p = 0.000$) and 2SLS results ($t = 3.832$, $p = 0.000$) at the 0.01 significance level. A possible accounting distortion (e.g., different depreciation methods) of restaurant firm performance measured by proxy $Q$ may have existed in restaurant firms over the period

involved in this study. Although the average FIX of 10.8% in the sample firms is relatively low compared to that of 49.6% in Demsetz & Villalonga's (2001) study, the results echo their findings that FIX has a significant and positive impact on average Tobin's *Q*.

The adjusted R-squared for Eq. (1) is 0.385 for OLS and 0.332 for 2SLS. In other words, the OLS model explains 38.5% of the variations of proxy *Q* where institutional ownership was treated as an exogenous variable, and the 2SLS model accounted for 33.2% of the variations of proxy *Q* where institutional ownership was treated endogenously. This study's adjusted R-squared figures derived from the model in the restaurant sector are higher than those of previous studies. For example, Agrawal & Knoeber (1996) had a 0.35 adjusted R-squared for the OLS model and 0.05 for the 2SLS one, and Clay (2001) had a 0.33 adjusted R-square for the OLS model and 0.15 for the 2SLS one. The *F* statistics for Eq. (1) are 45.506 ($p = 0.000$) for OLS and 36.200 ($p = 0.000$) for 2SLS, indicating that both the models are statistically significant at the 0.01 significance level in explaining the variations in restaurant firm performance as measured by proxy *Q*.

Serious multicollinearity is likely not present in OLS, since all VIFs of the independent variables are below 10 (Neter et al., 1996). For the 2SLS technique, the level of multicollinearity among the independent variables could not be assessed because VIFs, Pearson correlation matrix or condition index is not available in the 2SLS regression output. Although the coefficient estimates in the presence of multicollinearity remain unbiased and the R-squared is unaffected, the issue of multicollinearity may cause large variances of the coefficient estimates that attribute Type II errors. One rule of thumb in

dealing with the multicollinearity issue is that, as long as all t statistics are larger than 2 when adopting the 0.05 significance level or larger than 1.67 when adopting the 0.1 significance level, the issue is not of concern (Kennedy, 2003). In other words, when key t statistics are large enough to reject the null hypothesis in a t-test at the 0.1 significance level adopted in this study, the effect of multicollinearity on the model becomes irrelevant (Jeffrey M. Wooldridge, personal communication, April 5, 2005). In view of the t statistics of the 2SLS results in Table 17, possible existence of serious multicollinearity effects in this study appear to be minimal.

While the 2SLS technique is justified and preferred in Eq. (1) in the restaurant sector, the OLS and 2SLS techniques yield relatively similar results on the t tests of the set of independent variables with the exception of the DEBT variable.

Institutional Ownership Equation: The Restaurant Sector

Table 18 presents regression results of the institutional ownership equation for the restaurant sector. Proxy $Q$ was found to be a significant determinant of the percentage of institutional ownership in restaurant firms for both the OLS ($t = 7.129, p = 0.000$) and 2SLS ($t = 2.327, p = 0.021$) results at the 0.05 significance level. In other words, institutional investors are attracted to restaurant firms with better performance, as measured by proxy $Q$. Better performing restaurant firms may help satisfy institutional investors' fiduciary duties to their clients and attract higher institutional shareholdings. This finding is consistent with Cho's (1998), Loderer & Martin's (1997) and Demsetz & Villalonga's (2001) studies, in which ownership structure is treated endogenously.

Table 18

Regression Results of the Institutional Ownership Equation for the Restaurant Sector

| | Dependent Variable: Institutional Ownership Percentage | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | *p* value | VIF | t statistics | *p* value |
| (Intercept) | -12.635 | 0.000 | | -12.188 | 0.000 |
| *Q* | 7.129 | 0.000 | 1.423 | 2.327 | 0.021 |
| SIZE | 13.831 | 0.000 | 1.731 | 10.971 | 0.000 |
| ROA | 3.577 | 0.000 | 1.212 | 3.303 | 0.003 |
| BETA | -0.670 | 0.504 | 1.367 | -0.614 | 0.540 |
| DEBT | -7.790 | 0.000 | 1.185 | -5.920 | 0.000 |
| DIV | -3.695 | 0.000 | 1.209 | -2.973 | 0.003 |
| *F* statistics | 104.949 | 0.000 | | 97.380 | 0.000 |
| Adjusted $R^2$ | 0.688 | | | 0.671 | |

SIZE was found to affect the level of institutional ownership in restaurant firms in a positive and significant manner for both the OLS ($t = 13.381, p = 0.000$) and 2SLS ($t = 10.971, p = 0.000$) results at the 0.01 significance level. Although larger firms require more investment capital from shareholders for a given fraction of equity of the firm, institutions seem to have a preference for larger restaurant firms, which may be due to their higher financial capability than smaller firms. This finding is consistent with what

was expected— that financial institutions are more likely to buy stocks of large firms (Crutchley et al., 1999). This was also evidenced in the restaurant sector in this study.

Consistent with O'Brien and Bhushan's (1990), and Crutchley et al.'s (1999) studies, the profitability of restaurant firms in this study (measured by ROA) was found to be a significant and positive determinant of institutional ownership percentage for both the OLS ($t = 3.577, p = 0.000$) and 2SLS ($t = 3.303, p = 0.003$) results at the 0.01 significance level. This result also supports the notion that financial institutions invest in firms with higher profitability to fulfill their fiduciary responsibility to investors (Crutchley et al., 1999).

In a finding that is inconsistent with the research of O'Brien and Bhushan (1990) and Crutchley et al. (1999), BETA, or the systematic risk of the restaurant firms in this study, does not have a significant relationship with the changes in institutional ownership percentage for either the OLS or 2SLS results. One possible explanation for the lack of significance for the BETA variable in this study is that the stocks of restaurant firms may not be risky, as evidenced by the average BETA of 0.366 (see Table 5) for the sample firms, where only 20 out of the 284 restaurant firm/year observations had a BETA greater than one. Typical stocks have a BETA equal to or greater than one (Keown et al., 2003). The average value of BETA in Crutchley et al.'s (1999) study was 1.064 for the 1987 sample and 1.072 for the 1993 sample. BETA in their study acts as a significant determinant of institutional ownership percentage for both years that were examined. In other words, financial institutions may not consider risk in terms of BETA as a significant factor when making buy/sell decisions on restaurant stocks, since the overall industry has a low systematic risk level.

DEBT has a significant and negative impact on institutional ownership in restaurant firms for both the OLS ($t = -7.790$, $p = 0.000$ and 2SLS ($t = -5.920$, $p = 0.000$) results at the 0.01 significance level. Thus, higher debt ratios lead to lower institutional ownership percentages. This finding is consistent with the notion that higher debt ratios lessen the need for institutional monitoring and result in lower shareholdings by institutions (Demsetz & Villalonga, 2001; Welch, 2003). This result also supports Bathala et al.'s (1994), Chaganti & Damanpour's (1991) and Crutchley & Jensen's (1996) empirical findings that debt and institutional ownership have become substitutes for each other in the agency framework. In other words, restaurants with lower debt levels may allow institutions to have greater freedom in their monitoring role, thus creating an incentive for them to own more shares. In addition, institutions may prefer low-debt firms possibly due to their fear of high bankruptcy rates in restaurant firms (Gu, 2002).

DIV shows a significant and negative impact on institutional ownership in restaurant firms for both the OLS ($t = -3.695$, $p = 0.000$) and 2SLS ($t = -2.973$, $p = 0.003$) results at the 0.01 significance level. The negative sign on DIV further suggests that institutions may prefer restaurant firms that retain their earnings for future reinvestment purposes. This finding supports what Jensen, Solberg & Zorn's (1992) point that financial institutions investing in firms are not attracted by any specific dividend policy.

The adjusted R-squared of Eq. (2) is 0.688 for OLS and 0.671 for 2SLS. Thus, the OLS model explained 68.8% of the variations in the institutional ownership data where it was treated exogenously, and the 2SLS model accounted for 67.1% of the variations in the institutional ownership data where it was treated endogenously. As with Eq. (1), the adjusted R-squared figures of Eq. (2) derived from this study are much higher than those

of previous studies. Agrawal & Knoeber (1996) had a 0.13 adjusted R-squared for the 2SLS model (no OLS model was examined on the institutional ownership in their study), and Clay (2001) had a 0.49 adjusted R-squared for the OLS model (no 2SLS model was examined on the institutional ownership in his study). In this study, the model $F$ statistics for Eq. (2) are 104.949 ($p = 0.000$) for OLS and 97.380 ($p = 0.000$) for 2SLS, signifying that both models are statistically significant in explaining the variations in institutional ownership as measured by their ownership percentage at the 0.01 significance level.

Serious multicollinearity does not appear to be present in the OLS model, since all VIFs are below 10 (Neter et al., 1996). Concerns of serious multicollinearity among the independent variables in 2SLS do not seem to be present either, since OLS application is sufficient in Eq. (2). While OLS is sufficient in Eq. (2) for the restaurant sector, both the OLS and 2SLS techniques provide identical results on the t-tests for the set of independent variables (e.g., SIZE is significant in both the OLS and 2SLS results).

Firm Performance Equation: The Casino Sector

Table 19 shows both the OLS and 2SLS results of Eq. (1) for the casino sector. For the OLS results, institutional ownership demonstrates a significant and positive impact ($t = 1.970$, $p = 0.051$), at the 0.1 significance level, on casino firm performance as measured by proxy $Q$. This finding is not only consistent with previous research where institutional ownership was treated as an exogenous variable (Chaganti & Damanpour, 1991; Han & Suck, 1998; McConnell & Servaes, 1990), but also with what was found in the restaurant sector in this study. Thus, a higher percentage of institutional ownership leads to better casino firm performance.

Table 19 Regression Results of the Performance Equation for the Casino Sector

| | Dependent Variable: Firm Performance (Proxy $Q$) | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | $p$ value | VIF | t statistics | $p$ value |
| (Intercept) | 2.784 | 0.006 | | 2.344 | 0.021 |
| INST | 1.970 | 0.051 | 1.804 | 2.185 | 0.031 |
| SIZE | -1.572 | 0.119 | 1.955 | -2.143 | 0.035 |
| DEBT | 4.282 | 0.000 | 1.150 | 2.883 | 0.005 |
| FIX | 1.994 | 0.049 | 1.016 | 1.560 | 0.122 |
| $F$ statistics | 5.566 | 0.000 | | 2.227 | 0.071 |
| Adjusted $R^2$ | 0.144 | | | 0.045 | |

Considering institutional ownership as an endogenous explanatory variable, as justified by the DWH test, the 2SLS results show that institutional ownership is still a significant determinant of casino firm performance (t = 2.185, $p$ = 0.031) at the 0.05 significance level. This finding is, again, inconsistent with previous research that failed to establish a positive and significant relationship between institutional ownership and firm performance in a simultaneous framework (Agrawal & Knoeber, 1996; Craswell et al., 1997; Loderer & Martin, 1997). However, it confirms Clay's (2001) empirical conclusion that institutional ownership increases firm value as measured by a proxy for Tobin's $Q$, as was found for the restaurant sector in this study. Institutional investors may have

assumed an efficient monitoring role in corporate governance in casino firms, despite the possible hindrance of ownership restrictions set forth in state gaming regulations, in order to fulfill their fiduciary duties. This contributes to better casino firm performance.

SIZE, acting as a control variable, was found to be a significant determinant of casino firm performance for the 2SLS results ($t = -2.143$, $p = 0.035$) at the 0.05 significance level but not for the OLS ones. The negative sign indicates that larger casino firms are associated with lower proxy $Q$s. The expectation that both growth opportunities and Tobin's $Q$ should be lower for larger firms (Agrawal & Knoeber, 1996) was also evidenced in the casino sector in this study

DEBT was found to be a significant and positive determinant of casino firm performance in both the 2SLS ($t = 4.282$, $p = 0.000$) and OLS ($t = 2.883$, $p = 0.005$) results at the 0.01 significance level. Although the casino sector, characterized by a 52.6% mean debt ratio in the sample as shown in Table 6, on average relies slightly more on debt than equity capital, DEBT attributes a value-enhancing effect possibly via corporate tax shields that bring about higher values of performance indicators—in this study proxy $Q$ (Morck et al., 1988). In addition, since proxy $Q$ somewhat reflects how the market prices the firm, the positive impact of DEBT on proxy $Q$ indicates the market may encourage more debt usage of casino firms for future development purposes possibly due to the sector's prospective outlook.

FIX reveals a positive impact on casino firm performance in the OLS results ($t = 1.994$, $p = 0.049$) at the 0.05 significance level; however, no significant impact was found in the 2SLS results. As aforementioned that the 2SLS technique in Eq. (1) is justified by the DWH test, and it yields unbiased and consistent parameter estimates better than OLS

(Wooldridge, 2003); FIX was determined not to have a significant impact on casino firm performance. In other words, a possible accounting distortion (e.g., different depreciation methods) of casino firm performance as measured by proxy $Q$ was not evidenced statistically in the sample firms. Only 39.6% of the 106 casino firm/year observations had more than 10% of capital expenditures as a fraction of sales. The average FIX is 13.6% (excluding the Wynn Resort) for the sample firms (see Table 6), compared to 49.6% in Demsetz & Villalonga's (2001) study where FIX showed a significantly positive impact on average Tobin's $Q$. The relatively low capital spending of casino firms, compared to the manufacturing firms in Demsetz & Villalonga's (2001) study, was likely the cause of FIX's non-significant relationship with casino firm performance.

The adjusted R-squared for Eq. (1) is 0.144 for OLS and 0.045 for 2SLS. That is, the OLS model explained 14.4% of the variations in proxy $Q$ data where institutional ownership was treated as an exogenous variable, and the 2SLS model accounted for only 4.5% of the variations in proxy $Q$ data where institutional ownership was treated endogenously. The adjusted R-squared derived from this sector are lower than those of previous studies (e.g., Agrawal & Knoeber, 1996; Clay, 2001). It is possible that some important and/or relevant explanatory variables are omitted from the model. Nevertheless, the $F$ statistics for Eq. (1) are 5.566 ($p = 0.000$) for OLS and 2.227 ($p = 0.071$) for 2SLS, indicating that both models are statistically significant, but at the different significance levels, in explaining the variations in casino firm performance as measured by proxy $Q$.

Serious multicollinearity does not seem to be present in the OLS model, since all VIFs are below 10 (Neter et al., 1996). According to the rule of thumb provided by Kennedy (2003) and Wooldridge (Jeffrey M. Wooldridge, personal communication, April

5, 2005) and in view of the t statistics of the 2SLS results in Table 19, any possible effect from multicollinearity among the independent variables in 2SLS seems to be minimal.

While the DWH test suggests adoption of the 2SLS technique in Eq. (1) in the casino sector, the OLS and 2SLS techniques provide different results on the t tests for the set of independent variables.

Institutional Ownership Equation: The Casino Sector

As seen in Table 20, proxy $Q$ was found to be a non-significant determinant of the percentage of institutional ownership in casino firms for both the OLS and 2SLS results. Contrary to what was expected, firm performance, as measured by proxy $Q$ in this study, is not considered a significant factor while institutional investors make their buy/sell decisions on casino stocks. One possible explanation for this result is that casino firm performance is substantially affected by fluctuations of gambling outcomes in the casinos from time to time, which prevents institutional investors from using this variable in making their buy/sell decisions. The factor of "chance" or "luck" inherent in casino gaming is something that financial institutions may not be able to price accordingly. Another possible explanation is that firm performance measures, other than proxy $Q$, may be more suitable for the casino sector and may project a better picture of casino firm performance. Mergers and acquisitions (M&A) activities of casino firms have been frequently observed in recent years and firm performance measures, such as operating margin, net profit margin, return on capital or return on net worth, are widely used in M&A activities (Bojanic & Officer, 1994; Malatesta & Walkling, 1988). It is possible that institutional investors have adopted these measures in gauging casino firm performance when making their buy/sell decisions.

Table 20

Regression Results of the Institutional Ownership Equation for the Casino Sector

| | Dependent Variable: Institutional Ownership Percentage | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | *p* value | VIF | t statistics | *p* value |
| (Intercept) | -4.555 | 0.000 | | -3.973 | 0.000 |
| *Q* | 1.024 | 0.308 | 1.536 | -0.336 | 0.738 |
| SIZE | 5.759 | 0.000 | 1.684 | 5.570 | 0.000 |
| ROA | 0.917 | 0.361 | 1.501 | 1.052 | 0.295 |
| BETA | 1.390 | 0.168 | 1.639 | 1.402 | 0.164 |
| DEBT | -2.186 | 0.031 | 1.598 | -0.589 | 0.557 |
| DIV | 0.600 | 0.550 | 1.152 | 0.707 | 0.481 |
| *F* statistics | 13.125 | 0.000 | | 12.396 | 0.000 |
| Adjusted $R^2$ | 0.409 | | | 0.394 | |

SIZE has a significant and positive impact on institutional ownership in casino firms for both the OLS (t = 5.759, $p = 0.000$) and 2SLS (t = 5.570, $p = 0.000$) results at the 0.01 significance level. Thus, larger casino firms attract more equity capital from institutional investors. This finding is consistent with what was expected, in that financial institutions are more likely to buy stocks of large firms (Crutchley et al., 1999).

Inconsistent with the research of O'Brien and Bhushan's (1990), and Crutchley et al.'s (1999), ROA was not found to be a significant determinant of institutional ownership percentage for either the OLS or 2SLS results. Similar to the rationale for the non-significance of proxy $Q$ and contrary to what was expected, ROA was not a significant factor for institutional investors in making their investment decisions in this study.

Inconsistent with what O'Brien and Bhushan (1990), and Crutchley et al. (1999) found, BETA, or the systematic risk of the casino firms in this study, does not demonstrate a significant impact on the changes in institutional ownership percentage for either the OLS or 2SLS results. One possible explanation for the lack of significance of the BETA variable in the model is that the stocks of casino firms are not considered as risky, as evidenced by the average BETA of 0.599 (see Table 6) for the sample firms, where only 22 out of the 106 casino firm/year observations had a BETA greater than one. Typical stocks have a BETA equal to or greater than one (Keown et al., 2003). In other words, the overall low BETA in the casino sector shows that financial institutions do not consider risk in terms of BETA measurement a significant factor when making their buy/sell decisions on casino stocks.

DEBT has a significant and negative impact on institutional ownership in casino firms in the OLS ($t = -2.186$, $p = 0.031$) results at the 0.05 significance level, but not in the 2SLS results. Since OLS is sufficient in estimating Eq. (2), DEBT is determined to be a significant determinant of institutional ownership in casino firms in this study. Thus, higher debt ratios lead to lower institutional ownership percentages. This finding is consistent with the notion that higher debt ratios diminish the need for institutional

monitoring and result in lower shareholdings by institutions (Demsetz & Villalonga, 2001; Welch, 2003). This result also indicates that debt and institutional ownership may have become substitutes for each other in the agency framework. In other words, low leverage in casino firms may give more room for institutions to play their monitoring role, thus creating an incentive for them to hold more shares.

DIV does not play a significant role in affecting institutional ownership percentage in casino firms for either the OLS or 2SLS results at the 0.1 significance level.

The adjusted R-squared of Eq. (2) is 0.409 for OLS and 0.394 for 2SLS. Alternatively, 40.9% of the variations of institutional ownership were explained by the OLS model and 39.4% of variations of institutional ownership were accounted for by the 2SLS model. The adjusted R-squared figures for Eq. (2) in this study are fairly comparable to those of previous studies (Agrawal & Knoeber, 1996; Clay, 2001). In this study, the model *F* statistics for Eq. (2) are 13.125 ($p = 0.000$) for OLS and 12.396 ($p = 0.000$) for 2SLS, which confirm that the models are statistically significant at the 0.01 significance level in explaining the variations in institutional ownership in casino firms.

While OLS is sufficient in Eq. (2) in the casino sector, VIFs are all below 10, and, therefore, no serious multicollinearity appears to be present (Neter et al., 1996). Both OLS and 2SLS provide identical results on the t tests for the set of independent variables except on the DEBT variables.

Firm Performance Equation: The Hotel Sector

Table 21 shows both the OLS and 2SLS results of Eq. (1) for the hotel sector.

Table 21 Regression Results of the Performance Equation for the Hotel Sector

| | Dependent Variable: Firm Performance (Proxy $Q$) | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | $p$ value | VIF | t statistics | $p$ value |
| (Intercept) | 0.007 | 0.995 | | 0.288 | 0.774 |
| INST | 0.955 | 0.343 | 1.315 | 1.466 | 0.147 |
| SIZE | 1.531 | 0.130 | 1.153 | 0.515 | 0.608 |
| DEBT | -1.802 | 0.076 | 1.164 | -0.684 | 0.496 |
| FIX | -1.588 | 0.117 | 1.082 | -0.548 | 0.586 |
| $F$ statistics | 3.875 | 0.007 | | 3.712 | 0.009 |
| Adjusted $R^2$ | 0.136 | | | 0.131 | |

Institutional ownership, whether treated exogenously or endogenously, does not significantly affect hotel firm performance, as measured by proxy $Q$ at the 0.1 significance level in this study. From a theoretical and empirical standpoint, the finding is consistent with Demsetz's (1983) argument on ownership endogeneity. It also supports other empirical research (Agrawal & Knoeber, 1996; Craswell et al., 1997; Loderer & Martin, 1997) that ownership structure of a firm is an endogenous outcome of competitive selection within the firm leading to firm value maximization. Therefore, no systematic relationship between firm performance and ownership structure should be expected. Thus, a higher percentage of institutional ownership is not associated with

better or worse hotel firm performance in this study. From a statistical standpoint, the endogeneity of the institutional ownership variable is not evidenced by the DWH test; this result conflicts with Demsetz's (1983) argument on ownership endogeneity. One possible reason for this apparent contradiction may be due to the small hotel sample size ($N = 75$) in this study.

The non-significant relationship between institutional ownership and firm performance in the hotel sector also raises concerns from a statistical perspective. While the pair-wise Pearson correlation coefficient between the two (0.253) at the 0.05 significance level (see Table 10) suggests some relationship between in a regression model, both part and partial correlation coefficients between INST and proxy $Q$ reduced to below 0.1 with other control variables included in the model; hence the non-significance of INST on proxy $Q$ (Hair, Anderson, Tatham & Black, 1998).

SIZE, a control variable, was found to be a non-insignificant determinant of hotel firm performance for both the OLS and 2SLS results at the 0.1 significance level, possibly also due to the small sample size ($N = 75$) in this study.

DEBT was found to be a significant and negative determinant of hotel firm performance in the OLS ($t = -1.802$, $p = 0.076$) results at the 0.1 significance level, but not in the 2SLS results. Since OLS is sufficient in Eq. (1) for the hotel sector, the OLS results were adopted. Although the hotel industry, characterized by a 41.9% mean debt ratio in the sample (see Table 7), relies less on debt than equity capital, DEBT has a value-reducing effect on proxy $Q$. This finding has some possible explanations. Firstly, as the pecking order theory suggests, well-performing firms in terms of their profitability are likely to be less-leveraged because they tend to finance their projects with internally

generated earnings first (Morck et al., 1988; Myers & Majluf, 1984; Tong & Ning, 2004; Welch, 2003), the hotel industry usually cannot afford new development without some form of public financing support, and the debt burden causes performance measure reductions (Hazinski, 2005). Secondly, the market seems to discourage hotel firms from utilizing more debt for future development possibly due to an unfavorable performance outlook on the hotel sector, especially given a recession and the effect of the 9.11 attacks (Higley, 2004).

FIX does not demonstrate any significant impact on firm performance for either the OLS or 2SLS results at the 0.1 significance level. A possible accounting distortion (e.g., different depreciation methods) of hotel firm performance, measured by proxy *Q*, was not evidenced statistically in the sample firms in this study. Only 44% of the 75 hotel firm/year observations had more than 10% of capital expenditures as a fraction of sales. The average FIX is 18.50% for the sample firms (see Table 7), compared to 49.6% in Demsetz & Villalonga's (2001) research where showed a significant and positive impact on average Tobin's *Q*. The relatively low capital spending of the hotel sector, compared to the manufacturing firms in Demsetz & Villalonga's (2001) study, was likely the cause of FIX's non-significant impact on hotel firm performance.

The adjusted R-squared for Eq. (1) is 0.136 for OLS and 0.131 for 2SLS. In other words, the OLS model explained 13.6% of the variations of proxy *Q* where institutional ownership was treated as an exogenous variable, and the 2SLS model accounted for 13.1% of the variations of proxy *Q* where institutional ownership was treated endogenously. The adjusted R-squared of the models in this sector are less comparable than those of previous studies (Agrawal & Knoeber, 1996; Clay, 2001); possibly some

relevant explanatory variables are missing from the model. The $F$ statistics for Eq. (1) are 3.875 ($p = 0.007$) for OLS and 3.712 ($p = 0.009$) for 2SLS, indicating that both models are statistically significant, at the 0.01 significance level, in explaining the variations in hotel firm performance as measured by proxy $Q$.

While the DWH test suggests OLS application in Eq. (1) in the hotel sector, all VIFs are below 10, indicating possible absence of serious multicollinearity. The OLS and 2SLS techniques yield similar results on the t tests of the set of independent variables except for the DEBT variable.

Institutional Ownership Equation: The Hotel Sector

Table 22 presents regression results of the institutional ownership equation for the hotel sector.

In particular, proxy $Q$ was not found to be a significant determinant of the percentage of institutional ownership in hotel firms for both the OLS and 2SLS results at the 0.1 significance level. One possible explanation for the lack of significance of proxy $Q$ might be that other variables omitted from the equation may be more important for institutional investors when making their buy/sell decisions than the hotel firm performance measure (proxy $Q$) used in this study. A second possibility may be the small sample size ($N = 75$). A third possibility may be that serious multicollinearity produced enlarged variances of the coefficient estimates, making it harder to reject the null hypothesis in a t-test for proxy $Q$ in 2SLS (Kennedy, 2003). For the following interpretation on the non-significant variables, the multicollinearity issue should be noted.

Table 22

Regression Results of the Institutional Ownership Equation for the Hotel Sector

| | Dependent Variable: Institutional Ownership Percentage | | | | |
|---|---|---|---|---|---|
| | OLS | | | 2SLS | |
| | t statistics | *p* value | VIF | t statistics | *p* value |
| (Intercept) | -1.125 | 0.265 | | -1.095 | 0.278 |
| *Q* | 0.848 | 0.400 | 1.284 | 1.412 | 0.163 |
| SIZE | 2.088 | 0.041 | 1.688 | 0.884 | 0.380 |
| ROA | 0.907 | 0.368 | 1.111 | -0.539 | 0.592 |
| BETA | 0.671 | 0.504 | 1.751 | -0.664 | 0.509 |
| DEBT | -2.241 | 0.028 | 1.199 | -0.389 | 0.699 |
| DIV | -2.861 | 0.006 | 1.170 | -1.724 | 0.090 |
| *F* statistics | 5.243 | 0.000 | | 2.522 | 0.030 |
| Adjusted $R^2$ | 0.261 | | | 0.113 | |

SIZE has a significant and positive impact on institutional ownership in hotel firms for the OLS ($t = 2.088$, $p = 0.041$) results at the 0.05 significance level, but not for the 2SLS results. Since 2SLS is deemed appropriate by the DWH test, SIZE is not determined to be significant in this study.

Inconsistent with the research of O'Brien and Bhushan's (1990), and Crutchley et al.'s (1999), ROA was not found to be a significant determinant of institutional

ownership percentage in hotel firms for either the OLS or 2SLS results at the 0.1 significance level. However, this significance test was conducted with a risk of committing a Type II error. Particularly, the opposite signs of ROA in the OLS and 2SLS results may be the result of the small sample size ($N = 75$) and the existence of serious multicollinearity. Further, the insignificance of ROA in 2SLS may also result from serious multicollinearity that causes smaller t statistics. Similarly, BETA, or the systematic risk of the hotel firms in this study, does not have a significant relationship with the changes in institutional ownership percentage for both the OLS and 2SLS results at the 0.1 significance level. This finding also has a possibility of committing a Type II error. The opposite signs on the BETA variable in the OLS and 2SLS results could also be caused by the small sample size and serious multicollinearity, and the non-significance of BETA in 2SLS may be caused by the enlarged variance resulting from serious multicollinearity. Therefore, no definite conclusions should be made on these two variables.

DEBT exhibits a significant and negative impact on institutional ownership in hotel firms in the OLS ($t = -2.241$, $p = 0.028$) results at the 0.05 significance level, but not in the 2SLS results. Since 2SLS is appropriate in estimating Eq. (2), DEBT is determined "possibly" a non-significant determinant of institutional ownership in hotel firms with a risk of committing a Type II error.

DIV does play a significant role in institutional ownership percentage in hotel firms for both the OLS ($t = -2.861$, $p = 0.006$) and 2SLS ($t = -1.724$, $p = 0.090$) results, but at different significance levels. The negative sign suggests that institutions prefer hotel firms that retain earnings for future reinvestment purposes, rather than pay out dividends.

Since hotels usually cannot afford future projects only with internally-generated funds and they raise funds through debt financing (Hazinski, 2005), it makes sense that institutional investors would prefer hotel firms retain earnings for reinvestment to lower the proportion of debt financing for future projects.

The adjusted R-squared for Eq. (2) are 0.261 for OLS and 0.113 for 2SLS. That is, 26.1% of the variations of institutional ownership were explained by the OLS model and only 11.3% of the variations of institutional ownership were accounted for by the 2SLS model. The adjusted R-squared for Eq. (2) in this study are less comparable to those of previous studies (Agrawal & Knoeber, 1996; Clay, 2001), and some important variables may be missing from the model. In this study, the model $F$ values for Eq. (2) are 5.243 ($p$ = 0.000) for OLS and 2.522 ($p$ = 0.030) for 2SLS, signifying that both models are statistically significant, at the 0.05 significance level, in explaining the variations in institutional ownership in hotel firms.

While 2SLS is preferred in Eq. (2) in the hotel sector, the 2SLS results in Table 22 raise some concern about committing Type II errors because of possible serious multicollinearity among independent variables. The OLS and 2SLS techniques show relatively different results on the t tests of the set of independent variables and on the signs of the coefficients.

## Hypotheses Testing

In review of the preceding sections presenting the results of statistical analysis on the relationship between institutional ownership and firm performance in three sectors of the

hospitality industry, the three hypotheses constructed for this dissertation are tested in this section.

Hypothesis I posits that institutional ownership will have a positive impact on firm performance in the restaurant sector. This hypothesis is supported at least at the 0.01 significance level. Employing the 2SLS technique, restaurant firm performance as measured by proxy $Q$ is dependent on the percentage of institutional ownership ($t = 6.134$, $p = 0.000$) where institutional ownership is treated as an endogenous explanatory variable as suggested by the DWH test. Alternatively, treating institutional ownership as a pure exogenous explanatory variable, the OLS results still support Hypothesis I—that institutional ownership significantly influences restaurant firm performance in a positive way ($t = 9.246$, $p = 0.000$).

Hypothesis II posits that institutional ownership will have a positive impact on firm performance in the casino sector. This hypothesis is supported at the 0.05 level. Treating institutional ownership as an endogenous explanatory variable and employing the 2SLS technique as suggested by the DWH test, casino firm performance as measured by proxy $Q$ is dependent on the percentage of institutional ownership ($t = 2.185$, $p = 0.031$) at the 0.05 significance level. Alternatively treating institutional ownership as a pure exogenous explanatory variable, the OLS results support Hypothesis II—that institutional ownership significantly influences casino firm performance in a positive manner ($t = 1.970$, $p = 0.051$) at the 0.1 significance level.

Hypothesis III posits that institutional ownership will have a positive impact on firm performance in the hotel sector. This hypothesis is not supported as the other two sectors were. Treating institutional ownership either endogenously or exogenously, hotel firm

performance as measured by proxy $Q$ is not dependent on the percentage of institutional ownership at the 0.1 significance level.

## Assumptions Checking

The underlying assumptions including normality, linearity and homoscedasticity of residuals for both the OLS and 2SLS techniques were examined by residuals scatterplots in which one axis is predicted scores of proxy $Q$ and the other axis is errors of prediction (Tabachnick & Fidell, 2001). Only relevant residuals scatterplots produced by the suitable techniques (OLS or 2SLS) in Eqs. (1) and (2) for the three sectors are presented in Figures 20-25 that follow. After comparing residuals scatterplots in Figures 20-25 in this study with examples of serious violations provided by Tabachnick & Fidell (2001), except for Figure 22, it appears that no major violations on the assumptions of the OLS and 2SLS regression are present in this study. The pattern of residuals in Figure 22 suggests that there might be some missing variables omitted from the casino firm performance model, and this is supported by the low adjusted R-squared of 0.045 of the model.

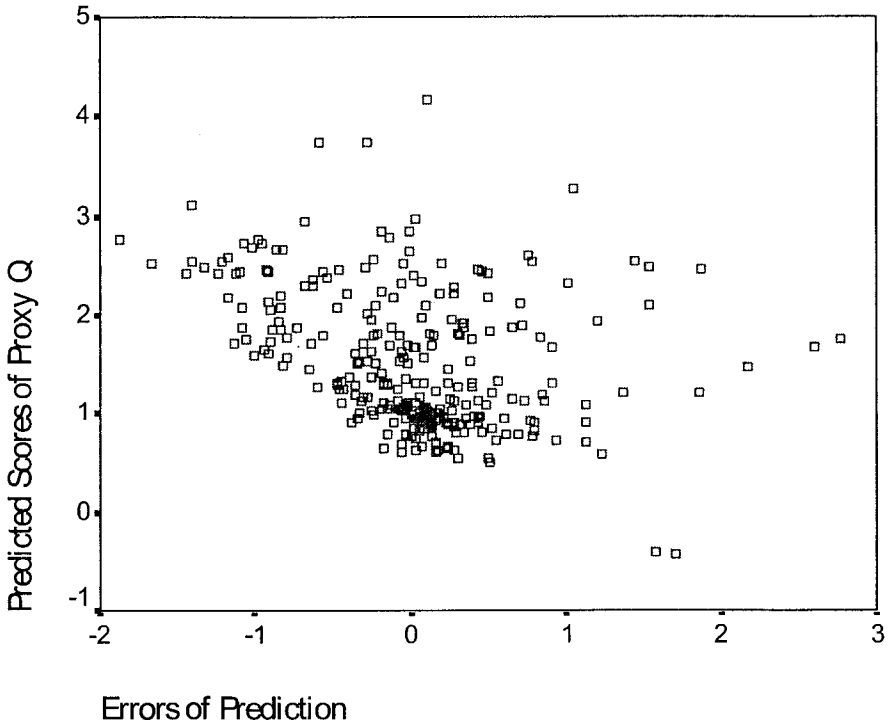


Figure 20. Residuals Scatterplot for Restaurant Firm Performance (2SLS)

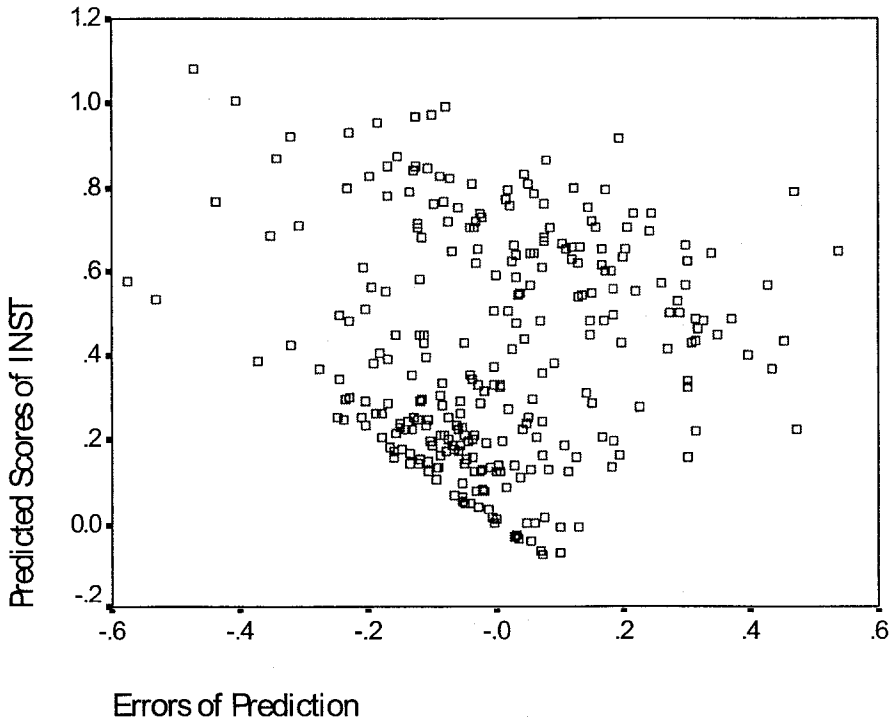


Figure 21. Residuals Scatterplot for Restaurant Institutional Ownership (OLS)

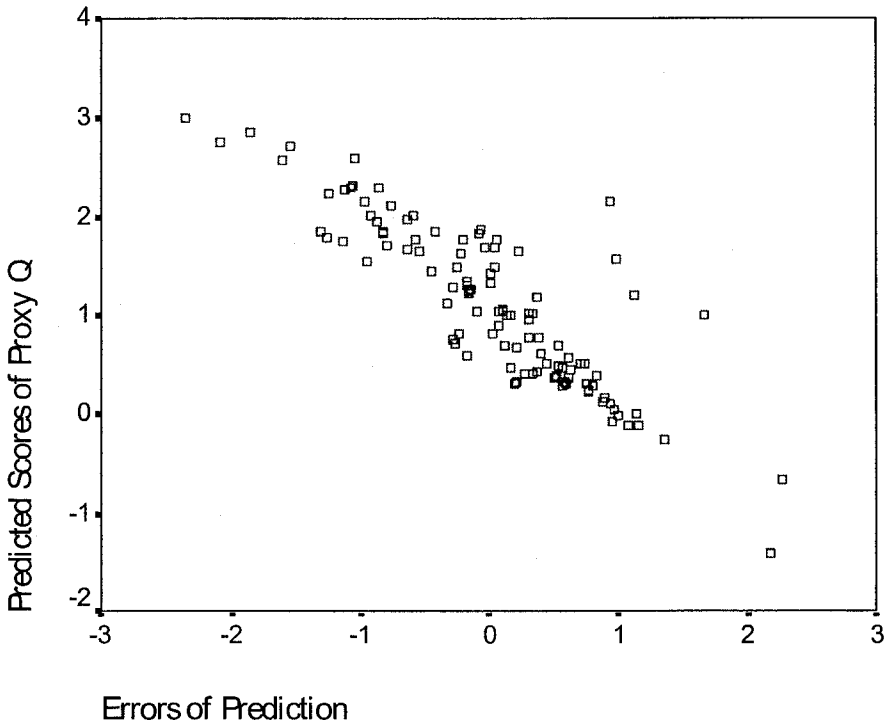


Figure 22. Residuals Scatterplot for Casino Firm Performance (2SLS)

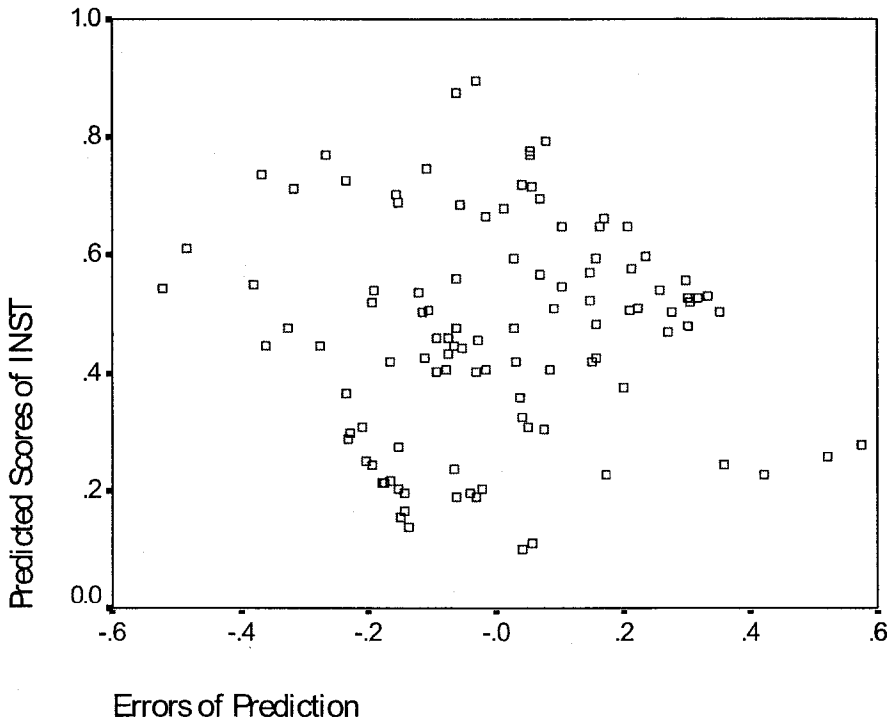


Figure 23. Residuals Scatterplot for Casino Institutional Ownership (OLS)

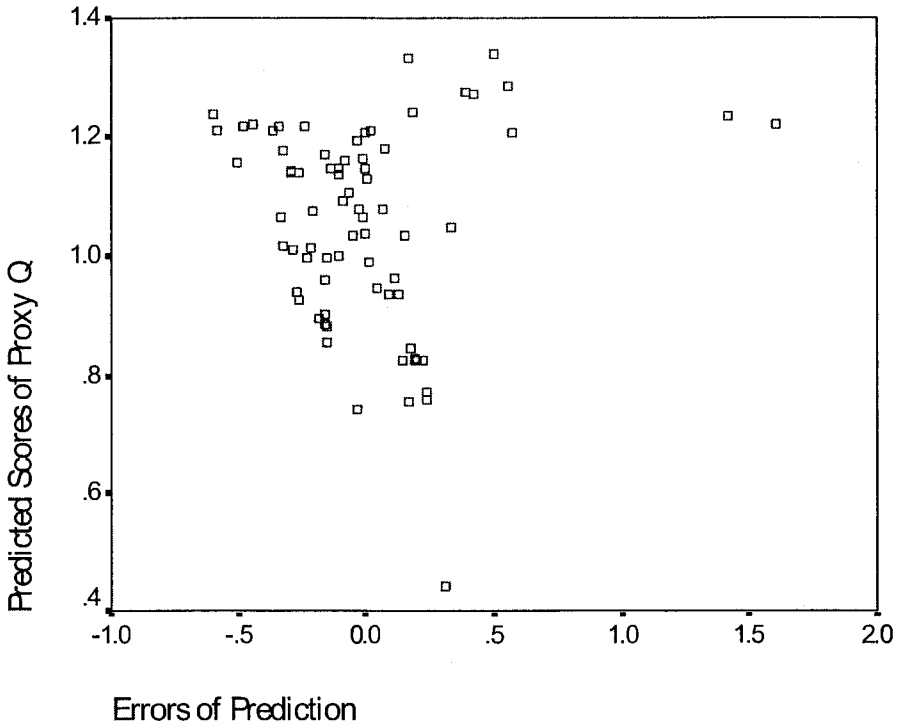


Figure 24. Residuals Scatterplot for Hotel Firm Performance (OLS)

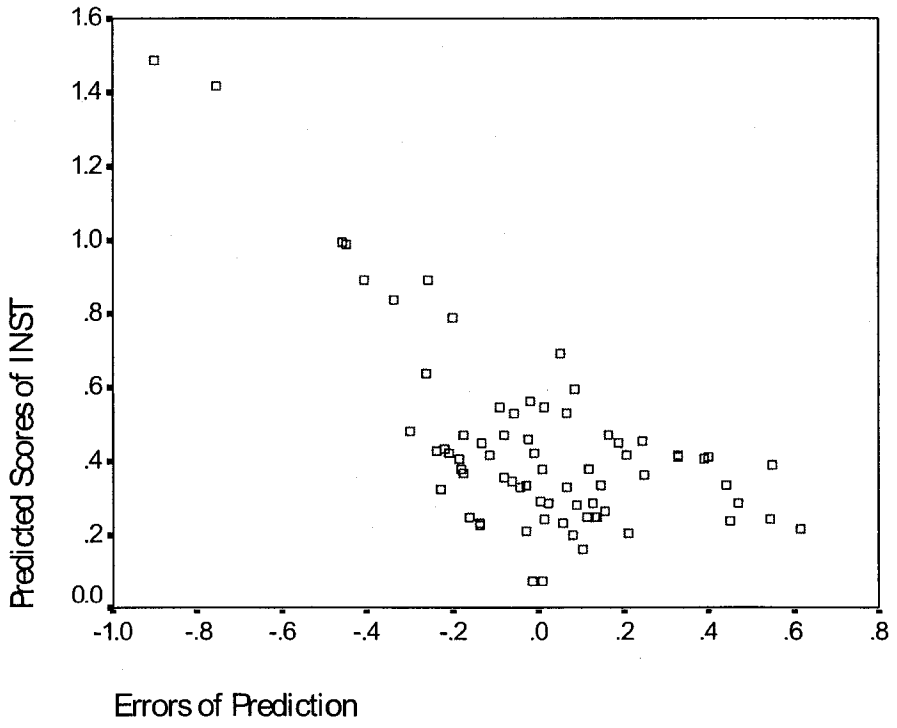


Figure 25. Residuals Scatterplot for Hotel Institutional Ownership (2SLS)

As mentioned in Chapter Three, the order condition for identification for equations in a simultaneous equations system can be checked when constructing the model, and the rank condition for identification can only be checked after data analysis. The rank condition for identification states that the first equation in a two-equation simultaneous system is identified if, and only if, the second equation includes at least one exogenous variable excluded from the first equation and the coefficient of the excluded exogenous variable has a non-zero coefficient (Wooldridge, 2003). That is, the rank condition for identification is met for Eq. (1) if at least one of the coefficients for ROA, BETA and DIV in Eq. (2) is non-zero. Similarly, the rank condition for identification is met for Eq. (2) if the coefficient for FIX in Eq. (1) is not zero. Examining the regression results section in this chapter confirms that the rank condition for identification for equations in this dissertation is met since none of the excluded exogenous variables in any equation has a zero coefficient.

## Summary

Statistical analysis and findings on the relationship between institutional ownership and firm performance for the three sectors of the hospitality industry were presented in this chapter. The descriptive statistics of the variables involved in this study were presented; the DWH tests were performed on INST and proxy $Q$ to justify the need and adoption of the 2SLS technique in either the firm performance equation or the institutional ownership equation; both OLS and 2SLS regression analyses were employed after the DWH test, in an attempt to identify whether any significant relationship existed between institutional ownership and firm performance; relevant data analysis results were

discussed; and lastly, the underlying assumptions of regression analysis were checked. Next, summary, conclusions and recommendations for future research will be presented in Chapter Five.

# CHAPTER 5

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Introduction

Since Berle & Means (1932) first noted the problems caused by the separation of ownership and control in corporations, the impact of ownership structure on firm performance has been a subject of debate. The rising importance of institutional investors in corporate governance has been observed in the growth of institutional ownership in the U.S. corporate equity market during the last several decades. The ownership structure/firm performance relationship is further complicated in the agency framework when institutional investors represent a number of individual investors as a whole and act as major shareholders in the firm. The financial theory has hypothesized that institutional ownership can increase managerial monitoring from a corporate governance perspective, mitigate agency problems and thus help improve firm performance (Black, 1992; Chaganti & Damanpour, 1991; Pound, 1991). Empirically, many researchers have examined the relationship between institutional ownership and firm performance in the major industries including the manufacturing sectors, but the conclusions have been mixed (Agrawal & Knoeber, 1996; Chaganti & Damanpour, 1991; Clay, 2001; Craswell et al., 1997; Han & Suk, 1998; Loderer & Martin, 1997; McConnell & Servaes, 1990;

Woidtke, 2002). To my best knowledge, to date, no research has been conducted on how financial institutions may influence firm performance through their stockholdings in the hospitality industry. Therefore, the main goals of this dissertation were to examine the impact of institutional ownership on firm performance in the hospitality industry, particularly in the restaurant, casino and hotel sectors; compare the results with those of previous studies; and provide interpretation and implications of the findings. The empirical findings from this study should contribute to the body of knowledge in hospitality finance from the perspective of a major service industry.

This chapter first summarizes the findings of this dissertation. Implications of the findings are then discussed. Next, limitations of the study are addressed, and, finally, the last section of this chapter presents a list of recommendations for future research.

## Summary of the Study

This study was designed to investigate the relationship between institutional ownership and firm performance in the hospitality industry, particularly in the restaurant, casino and hotel sectors. In consideration of the research questions and after a review of related literature, a simultaneous equations system including a firm performance equation and another institutional ownership equation was proposed. In addition, three hypotheses were constructed that posit a significant and positive impact of institutional ownership on firm performance in the three sectors.

In the firm performance equation [i.e., Eq. (1)], proxy $Q$ was selected as the firm performance measure and as the dependent variable, while the independent variables were INST, SIZE, DEBT, and FIX. In the institutional ownership equation [i.e., Eq. (2)],

the percentage of institutional ownership of a firm's outstanding shares was the dependent variable, while the independent variables were proxy *Q*, SIZE, ROA, BETA, DEBT, and DIV. Most of the independent variables in Eqs. (1) and (2), including SIZE, DEBT, FIX, ROA, BETA, DEBT and DIV are all firm-specific variables and act as control variables for the possibility of their causing spurious relationship between institutional ownership and firm performance. The selection and inclusion of the control variables were justified by current financial theory and from previous studies.

Ownership endogeneity was a major concern and consideration in this study. Ownership endogeneity states that the ownership structure of a firm, whether concentrated or diffused, is an endogenous outcome of competitive selection within the firm leading to firm value maximization (Demsetz, 1983). The results of the study provide evidence on the endogeneity of institutional ownership in the restaurant and casino sectors based on the DWH test and support previous studies arguing ownership structure endogeneity in other industries (Cho, 1998; Clay, 2001; Demsetz, 1983; Demsetz & Lehn, 1985; Demsetz & Villalonga, 2001; Holderness et al., 1999; Loderer & Martin, 1997). While those studies arguing for ownership endogeneity simply apply the 2SLS technique without statistical justifications and then compare the results with those obtained from the OLS technique, the DWH test in this study acts not only to test the "suspicious" endogeneity of institutional ownership, but also to justify the need for the 2SLS technique in a simultaneous equations framework. From a statistical standpoint, acting as an endogenous explanatory variable in Eq. (1). in the restaurant and casino sectors, the institutional ownership variable (i.e., INST) was found related to the error term of the firm performance variable (i.e., proxy *Q*); from a practical standpoint, the

level of institutional ownership in restaurant and casino firms was found endogenously determined by firm-specific factors such as firm size and debt ratio. All six control variables in this study also act as instrumental variables in equations where the 2SLS technique is appropriate.

To accomplish the main goal of this study, three major sectors of the hospitality industry, namely restaurant, casino and hotel, were identified and selected for analysis based on their individual NAICS code numbers. Given the availability of accounting and financial data of the hospitality firms of interest, the period of 1999-2003 was chosen as the study time frame and each firm/year observation was treated as an unique case in the pooled sample for the three sectors respectively. The final sample consisted of 284 restaurant firm/year observations, 106 casino firm/year observations, and 75 hotel firm/year observations. From an individual firm perspective, the sample included 65 restaurant firms, 24 casino firms, and 19 hotel firms.

The empirical findings of this study show that, firstly, in the restaurant sector, the percentage of institutional ownership significantly influences firm performance and vice versa. Secondly, in the casino sector, the percentage of institutional ownership was also found to be a significant determinant of firm performance, but the reverse is not true. Lastly, in the hotel sector, no significant relationship between institutional ownership and firm performance is present. A summary of findings for the three sectors are presented in Table 23, 24, and 25 respectively.

In testing the three hypotheses, Hypothesis I positing a significant and positive impact of institutional ownership on restaurant firm performance was supported. Hypothesis II positing a significant and positive impact of institutional ownership on casino firm

performance was also supported. But, Hypothesis III posting a significant and positive impact of institutional ownership on hotel firm performance was not supported in this study.

Table 23 Summary of Findings for the Restaurant Sector

| | Firm Performance Equation Eq. (1) | | | Institutional Ownership Equation Eq. (2) | | |
|---|---|---|---|---|---|---|
| Dependent Variable | *Q* | | | INST | | |
| Explanatory Variable | Predicted | Actual | Significant? | Predicted | Actual | Significant? |
| *Q* | | | | + | + | Yes |
| INST | + | + | Yes | | | |
| SIZE | − | − | Yes | + | + | Yes |
| DEBT | +/− | + | Yes | − | − | Yes |
| FIX | +/− | + | Yes | | | |
| ROA | | | | + | + | Yes |
| BETA | | | | +/− | − | No |
| DIV | | | | +/− | − | Yes |
| Hypothesis I | Supported | | | NA | | |

Table 24 Summary of Findings for the Casino Sector

| | Firm Performance Equation Eq. (1) | | | Institutional Ownership Equation Eq. (2) | | |
|---|---|---|---|---|---|---|
| Dependent Variable | *Q* | | | INST | | |
| Explanatory Variable | Predicted | Actual | Significant? | Predicted | Actual | Significant? |
| *Q* | | | | + | + | No |
| INST | + | + | Yes | | | |
| SIZE | – | – | Yes | + | + | Yes |
| DEBT | +/– | + | Yes | – | – | Yes |
| FIX | +/– | + | No | | | |
| ROA | | | | + | + | No |
| BETA | | | | +/– | + | No |
| DIV | | | | +/– | + | No |
| Hypothesis II | Supported | | | NA | | |

Table 25 Summary of Findings for the Hotel Sector

| | Firm Performance Equation Eq. (1) | | | Institutional Ownership Equation Eq. (2) | | |
|---|---|---|---|---|---|---|
| Dependent Variable | *Q* | | | INST | | |
| Explanatory Variable | Predicted | Actual | Significant? | Predicted | Actual | Significant? |
| *Q* | | | | + | + | No |
| INST | + | + | No | | | |
| SIZE | – | + | No | + | + | No |
| DEBT | +/– | – | Yes | – | – | No |
| FIX | +/– | – | No | | | |
| ROA | | | | + | – | No |
| BETA | | | | +/– | – | No |
| DIV | | | | +/– | – | Yes |
| Hypothesis III | Not Supported | | | NA | | |

## Implications of Hypothesis I Findings

This dissertation has found institutional ownership to be a significant and positive determinant of firm performance as measured by proxy $Q$ in the restaurant sector during 1999-2003. Acting as a cohort and representing individual investors, financial institutions seem to successfully play the role of major shareholders in restaurant firms. They may have exercised their right as shareholders and exerted their voting and monitoring power in restaurant firms in order to fulfill their fiduciary duties to their investors, thus helping enhance firm performance instead of just following the traditional "exit policy" when dissatisfied with firm management and incurring substantial losses as a result. Traditionally, institutions simply follow the "Wall Street Rule" or an "exit policy" when dissatisfied with firm management, and hence barely have any impact on firm performance (Bathala et al., 1994; Graves & Waddock, 1990).

In the restaurant sample in this study, the average institutional ownership percentage increased steadily from 38.7% in 1999 to 42.7% in 2003. This seems to indicate institutional investors' increasing interest in investing in the restaurant sector. With the rising importance of institutional ownership in publicly traded restaurant firms, institutions may have assumed an efficient monitoring role in influencing firm decision-making in a positive manner and achieved a better firm performance as evidenced by the results of this study. In the meantime, the low-debt restaurant sector may have offered an attractive corporate governance environment for financial institutions to exercise their equity-purchasing power and management monitoring, and helped improve restaurant firm performance by involving them in corporate decision-making process. Higher DEBT, as with higher institutional ownership, resulting

in better restaurant firm performance as measured by proxy $Q$ in a significant way in this study indicates some level of efficient monitoring provided by creditors. In addition, the negative sign of DEBT in the institutional ownership equation provides further evidence that institutional ownership and debt leverage may have become substitutes in mitigating the agency problems/costs in the agency framework in the restaurant sector as evidenced in previous studies (Bathala et al., 1994; Crutchley et al., 1999). In other words, institutional ownership in restaurant firms not only can substitute creditors in the monitoring functions in the agency framework, but also can act as a firm performance enhancer.

As mentioned in Chapter One, stock performance is of critical importance to investors' vested interest in restaurant firms, and therefore affects their desire to invest in the restaurant sector. As a result, investing in the restaurant sector institutionally may be a better form of investing than individually for restaurant investors to diminish the agency problem caused by the separation of management from ownership. Financial institutions have collective and, hence, greater monitoring power over firm management on behalf of individual investors. This helps improve firm performance and enhance the value of restaurant firms in the equity market. In addition, individual investors may chase institutions' buy/sell decisions on restaurant firm stocks, in that shareholdings by institutions indicate possible firm performance enhancement in the future.

Furthermore, financial institutions are also attracted to better-performing, larger and more profitable restaurant firms with lower financial leverage and dividend payouts. Most likely, institutional investment managers prefer better-performing restaurant firms in order to fulfill their fiduciary duties to investors. Therefore, institutional ownership and

firm performance affect each other significantly and positively in a simultaneous framework in the restaurant sector. More institutional monitoring of restaurant firm management helps institutions and individual investors gauge firm operations and corporate decisions in a more transparent way, and therefore reduce investment risk. These findings can certainly further help restaurant firm management recognize possible influence and monitoring derived from the presence of institutional investors through shareholdings. This can encourage corporate management to direct the firm towards value maximization that is in the shareholders' best interests. The board of directors in restaurant firms may also utilize their debt and dividend policies interchangeably, or simultaneously, as an instrument to manage the level and possible influence of institutional ownership in the firm in mitigating the agency problem or the agency costs.

## Implications of Hypothesis II Findings

Similar to what was found in the restaurant sector, institutional ownership is deemed a significant and positive determinant of firm performance as measured by proxy $Q$ in the casino sector during 1999-2003. Despite the possible hindrance of ownership restrictions set forth in state gaming regulations such as those in the states of Nevada and New Jersey, institutional investors play an important role in the corporate governance arena of casino firms, as supported by their positive influence on firm performance in this study. For example, although an institutional investor is refrained from owning more than 15% of equity shares of a casino firm in Nevada, if a waiver of finding of suitability is to be granted, individual institutional investors together may be able to act as a cohort of

investors in a single casino firm and collectively exert significant influence on casino firm performance.

In the casino sample in this study, the average institutional ownership percentage increased steadily from 43.3% in 1999 to 50.7% in 2002, but decreased to 43.2% in 2003. The sudden decrease in institutional ownership in 2003 may be due to unknown factors, and it deserves a separate examination. The seemingly increasing trend of institutional ownership from 1999 to 2002, accompanied by an increasing mean proxy $Q$ of 1.09 in 1999 to 1.15 in 2002, shows that institutions may have assumed an efficient monitoring role in influencing firm decisions in a positive way and contributed to better firm performance as evidenced in the casino sector. As a result, investing in the casino sector institutionally could be a better investment form than individually for casino investors to reduce the agency problem caused by the separation of management from ownership.

The negative sign of DEBT in the institutional ownership equation further indicates that institutional ownership and debt leverage may have become substitutes in mitigating the agency problems/costs in the agency framework in the casino sector as evidenced in the restaurant sector and in previous studies (Bathala et al., 1994; Crutchley et al., 1999). While DEBT signifies a significant and positive impact on casino firm performance as measured by proxy $Q$ and suggests some level of efficient monitoring provided by creditors in this study, institutional ownership not only may substitute DEBT in the agency relationship but also may help improve firm performance.

On the other hand, the findings of this study show that financial institutions are attracted to larger casino firms with lower financial leverage. Casino firm management, on the other hand, should be aware of institutional investors' potential influence on firm

performance and in corporate management decision-making process through their shareholdings, and manage the firm in a way that maximizes firm value. As with the restaurant sector, the board of directors in casino firms may also utilize their debt policy as a tool to direct the level and possible influence of institutional investors in the firm in controlling the agency problem.

## Implications of Hypothesis III Findings

Different the restaurant and casino sectors, institutional ownership in the hotel sector does not influence firm performance as measured by proxy $Q$ during 1999-2003. Financial institutions, given their average institutional ownership of 43.9% (see Table 7) in this study, play the role of major shareholders in hotel firms, but perhaps not in a significant and efficient way that could have influenced firm performance in a positive manner as hypothesized.

The average institutional ownership percentage in the hotel sample in this study increased gradually from 40.37% in 1999 to 46.59% in 2003. This suggests institutional investors' rising interest in incorporating hotel firms in their portfolio. However, possibly due to their insufficient participation in corporate governance in hotel firms, institutional investors' influence is not significantly demonstrated in firm performance. That is, they may not be efficient monitors of firm management in the agency framework and simply act as passive investors. Another possibility of the lack of a significant institutional ownership/firm performance relationship is that, institutional ownership in hotel firms is an endogenously determined outcome of competitive selection of ownership structures

leading to firm value maximization, and, therefore, no systematic relationship between the two was observed.

The non-significant relationship between institutional ownership and debt leverage suggests that institutional ownership may not have become a substitute for debt leverage in mitigating the agency problems/costs in the hotel sector as evidenced in the restaurant and casino sectors in this and previous studies (Bathala et al., 1994; Crutchley et al., 1999). This further suggests that institutional investors play a passive role in hotel firms. Consequently, investing in the hotel sector institutionally may not be considered a better form of investing than individually for hotel investors to reduce the agency problem caused by the separation of management from ownership.

## Limitations

Two limitations of this study are addressed in this section. First, due to data availability issues, each firm/year observation was treated as an unique case and all firm/year observations were pooled as a sample for analysis in each hospitality sector. Since not every firm has the same number of years of data available, for example some may have full five years of data and some may have just one, some firms may carry more "weight" than others through their presence in the pooled sample. Taking an average of five years of data from 1999-2003 for each firm would be ideal but there are not many publicly traded hospitality firms, particularly in the casino and hotel sectors, that warrant the regression analysis employed in this study.

The second limitation is the treatment of fiscal year versus calendar year in this study. While institutional ownership percentage is calculated as the year-end (i.e., December 31

or the last trading day of the year) percentage of outstanding ordinary shares of firms owned by financial institutions, hospitality firms have different end months for their fiscal years. While firms normally end the fiscal year in December, some, for example, end in January, April or July. This discrepancy may raise some issue as to how to attribute firm performance of a fiscal year to a proper calendar year matching the corresponding institutional ownership information of that specific year. COMPUSTAT attributes accounting and financial data of firms with fiscal year ending in months prior to June to the previous year, and ending in the month of June or later to the existing year. For example, Bob Evans Farms, Inc. (NASDAQ: BOBE) ends its fiscal year in April 2003, and COMPUSTAT attributes its accounting and financial data to year 2002, while Sonic Corporation (NASDAQ: SONC) ends its fiscal year in August 2003 and COMPUSTAT attributes the data to year 2003.

## Recommendations for Future Research

The relationship between ownership structure and firm performance has emerged as a promising research domain for hospitality researchers. In particular, the empirical findings of the institutional ownership/firm performance relationship from this dissertation have advanced the domain one step further. A list of recommendations is presented in this section for future research to either affirm the findings of this dissertation or extend beyond what has been studied.

First, different types of firm performance measures may be adopted in modeling the institutional ownership/firm performance relationship. This study adopted a proxy for Tobin's $Q$ as a firm performance measure with justifications. Future studies may employ

other firm performance measures such as ROE, ROA or stock returns used in other studies (Chaganti & Damanpour, 1991; Demsetz & Lehn, 1985; Han & Suck, 1998) to affirm the empirical findings on the institutional ownership/firm performance relationship as evidenced in this study. For the casino sector, other firm performance measures, such as earnings before interest, taxes, depreciation and amortization (EBITDA) or cash flow, may be adopted since these measures may be more relevant in gauging casino firm performance/profitability.

Second, the impact of voting versus non-voting shares held by financial institutions on firm performance can be further examined. Institutional ownership percentage in this study includes both voting and non-voting shares. A premise for the monitoring role assumed by stockholders of a firm is that these shares are borne with the voting right that enables stockholders to vote on matters such as corporate policies and composition of the board of directors. Future study may separate institutional voting and non-voting ownership and examine their relationships with hospitality firm performance respectively. Therefore, the impact of voting versus non-voting institutional ownerships on hospitality firm performance could be more specifically and precisely identified. Furthermore, the impact of shareholdings by active versus non-active institutions on firm performance may be examined. As discussed in Chapter Two, possibly due to the free rider problem in institutional shareholder activism, only 13 institutions out of a sample of 975 were identified as active and having ever submitted a shareholder proposal during 1986-1994 (Daily et al., 1996). Thus, the impact of active versus non-active institutions on firm performance in the hospitality industry deserves a further investigation.

Third, other types of shareholders such as managerial ownership and block shareholdings may be modeled with institutional ownership simultaneously in future studies. Since various types of ownership are considered endogenously determined and have been evidenced by this study and some prior studies (Cho, 1998; Clay, 2001; Demsetz, 1983; Demsetz & Lehn, 1985; Demsetz & Villalonga, 2001; Holderness et al., 1999; Loderer & Martin, 1997), inclusion of other ownership types along with institutional ownership in the model may further reveal the impact of institutional ownership on firm performance while taking into consideration the inter-relationship among managerial ownership, block-shareholder ownership and institutional ownership.

Fourth, other relevant firm-specific variables that may affect proxy $Q$ as a firm performance measure may be included as additional control variables in the model. For example, advertising expenditures as a fraction of sales revenues is often considered and included as a control variable in the firm performance equation employing Tobin's $Q$ as a performance measure in previous studies (Agrawal & Knoeber, 1996 Demsetz & Villalonga, 2001; McConnell & Servaes, 1990; Morck et al., 1988; Woidtke, 2002) because its potential influence is ignored when calculating Tobin's $Q$. Advertising often leads to brand recognition and potential sales, and hence is an indicator for future growth opportunities (Agrawal & Knoeber, 1996; Gelb, 2002) or firm performance. Currently generally accepted accounting principles (GAAP) requires expenditures on advertising to be immediately expensed in financial report and this accounting practice may understate book values for firms with significant levels of advertising expenditures, and distort proxy $Q$ (Amir & Lev, 1996). Inclusion of advertising expenditures in the model provides a function similar to other tangible assets in contributing to firm growth (Welch, 2003).

Advertising expenditures as a fraction of sales was originally considered in Eq. (1) of this study. The hospitality industry relies on advertising to some extent for its operations and, therefore, its potential influence on proxy $Q$ should be considered. However, not many firms explicitly report their advertising expenditures in the annual report. Advertising expenditures may be reported under either sales and marketing or general marketing expenses.

Fifth, promotion expenditures can be added as an additional control variable in the casino firm performance model. Similar to what advertising expenditures may have contributed to firm performance enhancement, promotions play an extremely important role in casino operations and marketing, and hence may help generate better firm performance not captured in the calculation of proxy $Q$ used in this study.

Sixth, using quarterly data, future studies may examine the impact of changes in institutional ownership on lagged firm performance in the hospitality industry. That is, examining the impact of changes in institutional ownership in the current quarter on firm performance in the next few quarters may more precisely gauge the true impact that institutional investors have on performance of the firm.

Seventh, the heterogeneity of institutional investors in future studies can be considered. As mentioned in Chapter One, different types of institutional investors, such as public pension funds, private pension funds, mutual funds, and insurance companies, may demonstrate different investment behaviors and pursue diverse objectives subject to various conditions and constraints. While this study treated institutional investors as a homogenous group due to data availability, separating institutional investors by types may further reveal other impacts on hospitality firm performance.

Finally, government regulations on casino gaming and institutional ownership in different gaming jurisdictions may be further considered in modeling the institutional ownership/firm performance relationship in the casino sector in future studies. Although institutional ownership shows a positive and significant impact on casino firm performance in this study, the extent of the role that government regulations play, if any, in the context of this study is unknown. The State of Nevada imposes a 15% institutional ownership restriction in a casino firm if a finding of suitability is to be waived. Will different percentages lead to different institutional behavior in their investment strategies? Will different state regulations regarding institutional ownership on casino gaming result in different conclusions on the institutional ownership/firm performance relationship in the casino sector? Are government regulations regarding institutional ownership in casino firms advantageous to institutions, firm management, or the investors? These answers should be answered in future studies.

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