Investigation of the relationship between firm-wise financial factors and firm performance in the hospitality industry

Zhenxing Mao

University of Nevada, Las Vegas

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INVESTIGATION OF THE RELATIONSHIP BETWEEN FIRM-WISE FINANCIAL FACTORS AND FIRM PERFORMANCE IN THE HOSPITALITY INDUSTRY

by

Zhenxing Mao

Bachelor of Science
Hangzhou University
1996

Master of Science
University of Nevada, Las Vegas
2001

Master of Science
University of Nevada, Las Vegas
2003

A dissertation submitted in partial fulfillment of the requirements for the

Doctor of Philosophy Degree in Hotel Administration
William F. Harrah College of Hotel Administration

Graduate College
University of Nevada, Las Vegas
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The Dissertation prepared by

Zhenxing Mao

Entitled

Investigation of the Relationship Between Firm-Wise Financial Factors and Firm Performance in the Hospitality Industry

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Examination Committee Chair

Dean of the Graduate College

Examination Committee Member

Examination Committee Member

Graduate College Faculty Representative
ABSTRACT

Investigation of the Relationship between Firm-wise Financial Factors and Firm Performance in the Hospitality Industry

by

Zhenxing Mao

Dr. Zheng Gu, Examination Committee Chair
Professor of Hotel Administration
University of Nevada, Las Vegas

This study empirically investigates the relationship between firm-wise financial factors and firm performance in the hospitality industry from 2000 to 2004 using panel data regression. After a literature review of firm-wise financial factors and their impact on performance in the literature, unit-effect and time-effect linear models were proposed and examined in both the restaurant and hotel sectors with different firm performance measures used as the dependent variable (i.e., Proxy Q, Sharpe ratio, and Treynor ratio). While some variables, especially liquidity and solvency, were found to have significant impacts on firm performance measured by Proxy Q and Sharpe ratio in both the restaurant and hotel sectors, no financial variable was found to have a significant relationship with the Treynor ratio in either sector. Implications of this study’s findings for both the restaurant and hotel sectors are discussed at the end.
TABLE OF CONTENTS

ABSTRACT .............................................................................................................................. iii

TABLE OF CONTENTS ......................................................................................................... iv

LIST OF TABLES ................................................................................................................... iii

LIST OF FIGURES ............................................................................................................... iv

ACKNOWLEDGEMENTS ...................................................................................................... v

CHAPTER 1  INTRODUCTION ............................................................................................ 1
  Research Questions ................................................................................................................. 3
  Significance of the Study ........................................................................................................ 4
  Contributions of the Study ...................................................................................................... 6
  Delimitations and Limitations ................................................................................................ 7
  Definitions ............................................................................................................................... 8
  Summary ............................................................................................................................... 11

CHAPTER 2 LITERATURE REVIEW .............................................................................. 12
  The Relationships Between Firm-wise Financial Factors and Firm Performance .......... 12
    Liquidity ................................................................................................................................... 12
    Solvency .................................................................................................................................. 16
    Activity ..................................................................................................................................... 19
    Growth ...................................................................................................................................... 19
    Profitability ............................................................................................................................. 22
    Management Ownership ....................................................................................................... 24
    Institutional Ownership .......................................................................................................... 25
    Dividend Policy ..................................................................................................................... 28
    Business Diversification ........................................................................................................ 29
    Geographical Diversification ................................................................................................. 31
    Size ......................................................................................................................................... 33
    Industry Effects ..................................................................................................................... 34
    Firm Performance Measures Review .................................................................................. 35
    Summary ............................................................................................................................... 40

CHAPTER 3 RESEARCH DESIGN AND METHODOLOGY ........................................... 42
  Hypotheses ............................................................................................................................. 42
  The Proposed Model .............................................................................................................. 43
  Panel Regression and its Assumptions .................................................................................. 45

iv

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<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Regression</td>
<td>45</td>
</tr>
<tr>
<td>Assumptions Checking</td>
<td>53</td>
</tr>
<tr>
<td>Variables Selection</td>
<td>56</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td>56</td>
</tr>
<tr>
<td>Independent Variables</td>
<td>56</td>
</tr>
<tr>
<td>Sample and Data</td>
<td>58</td>
</tr>
<tr>
<td>Summary</td>
<td>62</td>
</tr>
<tr>
<td>CHAPTER 4 FINDINGS OF THE STUDY</td>
<td>63</td>
</tr>
<tr>
<td>Assumptions Checking</td>
<td>63</td>
</tr>
<tr>
<td>Descriptive Statistics</td>
<td>70</td>
</tr>
<tr>
<td>The Restaurant Sector</td>
<td>70</td>
</tr>
<tr>
<td>The Hotel Sector</td>
<td>72</td>
</tr>
<tr>
<td>Correlation Matrix</td>
<td>74</td>
</tr>
<tr>
<td>Panel Regression Results</td>
<td>77</td>
</tr>
<tr>
<td>The Restaurant Sector</td>
<td>77</td>
</tr>
<tr>
<td>The Hotel Sector</td>
<td>85</td>
</tr>
<tr>
<td>Regression Results Summary</td>
<td>92</td>
</tr>
<tr>
<td>Hypotheses Testing</td>
<td>93</td>
</tr>
<tr>
<td>Summary</td>
<td>94</td>
</tr>
<tr>
<td>CHAPTER 5 SUMMARY, CONCLUSION, AND RECOMMENDATIONS</td>
<td>95</td>
</tr>
<tr>
<td>Introduction</td>
<td>95</td>
</tr>
<tr>
<td>Summary of the Study</td>
<td>96</td>
</tr>
<tr>
<td>Implications of the Findings</td>
<td>98</td>
</tr>
<tr>
<td>The Restaurant Sector</td>
<td>98</td>
</tr>
<tr>
<td>Strategic Suggestions for the Restaurant Sector</td>
<td>101</td>
</tr>
<tr>
<td>The Hotel Sector</td>
<td>103</td>
</tr>
<tr>
<td>Strategic Suggestions for the Hotel Sector</td>
<td>105</td>
</tr>
<tr>
<td>Recommendations for Future Research</td>
<td>107</td>
</tr>
<tr>
<td>REFERENCES</td>
<td>109</td>
</tr>
<tr>
<td>VITA</td>
<td>120</td>
</tr>
</tbody>
</table>
LIST OF TABLES

Table 1  Fixed Effects and Random Effects Models ....................................................  51
Table 2  Variables Obtained from COMPUSTAT between 2000-2004 ....................... 60
Table 3  Computation of the Variables in the Model .........................................................61
Table 4  Wooldridge Wald Test for Autocorrelation ................................................. 64
Table 5  Descriptive Statistics for the Restaurant Sector ............................................ 71
Table 6  Frequency and Percentages of the Dichotomous Variables for the Restaurant Sector ...................................................................................................71
Table 7  Descriptive Statistics for the Hotel Sector ............................................ 73
Table 8  Frequency and Percentages of the Dichotomous Variables for the Hotel Sector ...................................................................................................73
Table 9  Correlation Matrix of the Variables of the Restaurant Sector .......................75
Table 10 Correlation Matrix of the Variables of the Hotel Sector ................................76
Table 11 Results of Regression with Proxy Q as the Dependent Variable for the Restaurant Sector .......................................................................................79
Table 12 Results of Regression with Sharpe Ratio as the Dependent Variable for the Restaurant Sector .......................................................................................82
Table 13 Results of Regression with Treynor Ratio as the Dependent Variable for the Restaurant Sector .......................................................................................84
Table 14 Results of Regression with Proxy Q as the Dependent Variable for the Hotel Sector ...................................................................................................86
Table 15 Results of Regression with Sharpe Ratio as the Dependent Variable for the Hotel Sector ...................................................................................................89
Table 16 Results of Regression with Treynor Ratio as the Dependent Variable for the Hotel Sector ...............................................................................................91
LIST OF FIGURES

Figure 1  The Proposed Linear Model ................................................................. 44
Figure 2  Model Test Procedures Flow Chart ...................................................... 52
Figure 3  Residual Scatterplot of Proxy Q for Restaurant Firms ....................... 66
Figure 4  Residual Scatterplot of S-Ratio for Restaurant Firms .......................... 66
Figure 5  Residual Scatterplot of T-Ratio for Restaurant Firms ......................... 67
Figure 6  Residual Scatterplot of Proxy Q for Hotel Firms ................................. 67
Figure 7  Residual Scatterplot of S-Ratio for Hotel Firms ................................. 68
Figure 8  Residual Scatterplot of T-Ratio for Hotel Firms ................................. 68
Figure 9  Residual Scatterplot of Proxy Q AR (1) for Restaurant Firms ............... 69
Figure 10 Residual Scatterplot of Proxy Q AR (1) for Hotel Firms ..................... 69
Figure 11 Residual Scatterplot of S-Ratio AR (1) for Hotel Firms ..................... 70
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CHAPTER 1

INTRODUCTION

The hospitality industry is one of the largest and fastest growing industries in the world (Walker, 2006). It mainly consists of businesses that offer food, beverages and accommodations to their guests. Under the umbrella of the services industry, hospitality businesses share certain common characteristics with other service sectors. Tangible products, such as homes and televisions, can be possessed by individuals whereas intangible hospitality products such as, holiday memories and travel experiences, can only be enjoyed and remembered by guests. Further, production and consumption of hospitality products are often simultaneous and therefore, inseparable. For example, guests experience the service and atmosphere at a restaurant while at the same time, consuming the food and beverages provided by servers. On the other hand, hospitality firms often differ from other service establishments in that they largely serve to travelers who are away from their local residence, although restaurants arguably can provide services to both locals and tourists (Harrison & Enz, 2005). Another unique feature of the hospitality industry is the perishability of goods because some products, such as hotel rooms, usually can not be saved for future consumption.

Two major sectors of the hospitality industry are the focal points of this study: restaurants and hotels (including casino hotels). The restaurant sector includes commercial dining and drinking establishments, such as restaurants, bars, cafeterias, ice
cream parlors, and cafes. According to a recent industry forecast report by the National Restaurant Association (NRA), there were approximately 900,000 restaurants in the United States (US) with estimated sales of $476 billion in 2005, which equaled 4 percent of the total US gross domestic products (GDP). In fact, restaurants have experienced 14 consecutive years of real sales growth since 1992 when inflation was adjusted. The restaurant sector is the largest private-sector employer in the US. It employed about 12.2 million US workers in 2005, which is a roughly 9 percent of the total US workforce (National Restaurant Association [NRA], 2005). Considering that 9 percent of the total US workforce generates only 4 percent of total US GDP, this sector is particularly labor intensive with revenue per full time employee (FTE) being well below other industry’s standard figures. On the other hand, the hotel sector in the US is a $113.7 billion business which employed 1.8 million workers with approximately 47,600 hotels and over 4.4 million guestrooms as of 2004 (American Hotel & Lodging Association [AHLA], 2005). Hotels usually have a high seasonality effect either by day of the week or month of the year, along with high operating costs relative to their revenues.

Corporate finance, by nature, monitors and evaluates a company’s operation. Generally, only financial data can provide direct, comparable and objective measurements for firm performance. Hence, financial analysis offers a very important insight into a company’s overall performance. Financial management involves the process of three major decisions: asset investment; capital financing; and dividend policy, all of which have a significant impact on the performance of different departments in a firm (Chatfield & Dalbor, 2005).
Given the significant role of the hospitality industry in the whole economy and the importance of financial management, there is a great need to advance the theory and practice in hospitality financial management. Hospitality financial management will affect not only a specific firm per se, but also the overall industry. For instance, most hotels weathered the double blows of the 9/11 tragedy and economic downturn during the second half of 2001. Nevertheless, many restaurant companies still maintained their sustainable growth and achieved good performance as a whole during that time span. For example, Starbucks realized the largest percentage gain in 2001 for its brand name within the top 100 global brands (Khermouch, 2001). The success of Starbucks was multi-faceted, but at least two possible reasons for its success may be explained by its financial management. Starbucks started to expand operations outside of North America in 1998 and geographic diversification helped to mitigate the economic volatility by having operations in different nations. In addition, Starbucks had virtually no long-term debt, which kept its financial costs to a minimum and therefore, made it better able to withstand an economic recession. Its expansions were mainly through franchise operations with smaller upfront fees and lower capital risks. Thus, quality financial management can assist the hospitality firms in making healthy economic progress.

Research Questions

The goal of a firm is to maximize its firm value (Chatfield & Dalbor, 2005). Thus two fundamental questions for any corporate financial professional should be: Will financial management in a firm make a difference in its value; and if so, how? Having noticed that firm performance is also greatly affected by the general economy and financial
conditions, the research interest of this study has been delimited to how firm-wise financial features can influence firm performance in the hospitality industry. In other words, the purpose of this study is to investigate relationships between the hospitality firm’s common financial components and its performance. Identifying and understanding these factors can help hospitality organizations improve firm performance through control and management of certain aspects of firm financial factors. Thus, the goal of this study is to help advance the understanding of financial management in the hospitality industry.

Significance of the Study

Hospitality financial research has started to grow since the early 1990s and a rich body of knowledge has been generated over the past decade regarding the question of how to enhance firm performance by examining various firm-wise financial factors. Tsai (2005) examined the impact of institutional ownership on firm performance as measured by Tobin’s Q for hospitality industry from 1999 to 2003. After controlling for the effects of size, capital structure, and fixed assets percentage, he concluded that firm performance was significantly related with institutional ownership in both the restaurant and casino sectors. However, there was no significant relationship between institutional ownership and firm performance in the hotel sector. Gu and Kim (2001) explored the impact of managerial stock holdings on the restaurant firm performance using the financial data for restaurants from 1995 and 1996, while controlling their size and price/earning (P/E) effects. The results indicated a significant and positive relationship between restaurant firm performance and managerial ownership. A recent study conducted by Phillips and
Sipahioglu (2004) revealed no significant relationship between capital structures and firm performance using the data from 43 United Kingdom (UK) hotel companies. However, their study adopted accounting profitability as a measure for firm performance. Further, no other factors except the capital structure constructs were considered, which could lead to a serious problem of model underestimation. By analyzing the relationship between firm performance and dividend policy using hotel real estate investment trust (REIT) s and non-REITs firms, Mooradian and Yang (2001) found that hotel REIT firms outperformed their non-REIT counterparts from 1993 to 1999, using firm size, leverage, growth and profitability as controlling variables. Their finding was consistent with Jensen’s (1986) free cash flow hypothesis that more dividend payout was preferred in order to meet market expectations.

These previous studies have attempted to investigate the relationships between firm performance and capital structure, dividend policy, managerial ownership, and institutional ownership, respectively. However, these studies lacked consideration of certain firm-specific financial features such as liquidity and asset utilization, resulting in potential model misspecifications.

Based on an extensive survey of major journals in the hospitality management field, no studies on relationship between firm performance and firm-wise financial factors have been conducted in a comprehensive or integrated way for any sectors of the hospitality industry. In an effort to correct this oversight, this study attempts to examine the impact of common firm-specific financial constructs on firm performance in the restaurant and hotel (including casino hotel) sectors from two perspectives: unit (firm) effects and time
effects. In addition, different firm performance measures will be adopted in the study to better understand the impacts of firm-wise financial factors.

Contributions of the Study

The contributions of this study are three-fold. First, this study provides a comprehensive review and investigation of many firm-specific factors at the full complement that may affect firm performance and examine firm-wise financial factors in a simultaneous, integrated manner. A large number of previous studies generally investigate effects of only a specific factor, such as capital structure on stock performance. Thus, the results of those studies and the conclusions may differ due to model construction effects. The approach adopted here paints a more complete picture by evaluating more financial factors. The results of this study will be robust with an investigation of a wide range of theoretical factors. Hence, this study attempts to be theoretically rigorous, compared to prior studies.

Second, this study employs a regression analysis with panel data to mitigate the measurement problems for omitted or unobservable variables (Wooldridge, 2002). Using panel data (both cross-sectional and time-series in nature), this study will be able to empirically generate results more reliable and generalizeable than either cross-sectional or time series data alone. More observations than a single year cross section group are tested. Furthermore, this study considers differences between firms (i.e., unit effects) and the changes over time (i.e., time effects) to examine the relationship between firm-wise financial factors and performance. These two perspectives will complement each other to
provide meaningful results. Most of previous studies in panel data regression usually focus solely on the unit effects model, leaving time effects untouched.

Third, this study provides hospitality academicians and practitioners alike with a better understanding of the relationship between firm-wise financial factors and firm performance. As such may help hospitality firms to achieve better performance practically. The findings of this study may assist hospitality executives in adjusting their financial policies to enhance firm values. Many general finance articles use heterogeneous and diverse industry samples to investigate the relationship between stock performance and its underlying causes. The results may differ across industries since industries are not identical. Thus, a close focus on only one industry/sector may provide better insight and overcome this possible industry effect. This study offers such a solution to the problem with a focus on the hospitality industry. Further, like the customer and employee, the investor is also an important constituent of the hospitality industry. Stock performance is of critical importance to investors’ vested interest in the hospitality firms, and therefore, affects their desire to invest in the industry. Thus, investors’ perceptions of the firm’s financial status may influence the firm’s market value and affect its stock price.

Delimitations and Limitations

This study is limited to publicly traded hospitality firms identified through their individual North American Industry Classification System (NAICS) code numbers, which are listed in the New York Stock Exchange (NYSE), the American Stock and Options Exchange (AMEX), and the National Association of Securities Dealers.
Automated Quotation System (NASDAQ) in 2004. One limitation is the survival bias which is inherent in this practice. In the case of survival bias, the findings of a study tend to overestimate the relationship between firm performance and firm-wise financial factors because only firms with complete financial data set over the five year period will be investigated. Those firms which plunged during the time period will not be included. There are also some concerns with respect to financial constructs since different firms could follow different accounting procedures.

This study combines the hotel and casino hotel firms into the hotel sector due to the fact that there are limited observations in each category and they share certain commonalities, such as being capital intensive and labor intensive, to name only a few. Finally, although many other factors such as marketing strategy, human resource practices, service quality, corporate culture, and information technology adaptation will affect a firm’s performance, this study only focuses on a firm’s financial constructs and more specifically, firm-wise financial factors. In other words, this study views a firm’s financial features from a micro-perspective, which can be influenced by the firm’s management.

Definitions

Activity. A financial construct that measures the degree of a firm’s ability to generate revenues through various assets; also known as “asset utilization and management”.

Appraisal Ratio. Also known as information ratio, defined as the mean of the portfolio’s excess rates of return on the portfolio over the market return against its corresponding standard deviation (Goodwin, 1998).
Beta. A symbol representing the systematic risk of a firm's stock, or the undiversifiable portion of the investment risk inherent in stock ownership.

Business Diversification. A firm's strategy to extend the business to different industry sectors.

Dependent Variables. Variables that influence other variables.

Dividend Policy. A financial construct determining how to distribute firm earnings.

Unit Effects. Also called firm effects which state that there are significant differences among units (firms), such as company culture, locations, customer bases, management style.

Geographical Diversification. A firm's strategy to extend business to foreign nations.

Growth. A financial construct reflecting a firm's future earnings ability.

Independent Variables. Variables that are influenced by other variables.

Institutional Investors. Entities or organizations with large amounts of capital to invest, including pension funds, mutual funds, investment companies, insurance companies, and endowment funds.

Liquidity. A financial construct indicating a firm's capability of meeting its short-term obligations and the quickness and certainty of an asset to be converted into cash at its fair market value.

Jensen Ratio. A risk-adjusted index; represented by the intercept in the model that has the excess rates of return on the portfolio over the risk-free return regressed against the excess rates of return on the market over the risk-free return (Jensen, 1968).
Managerial Ownership. The proportion of the outstanding shares held by the firm’s corporate officers, directors, or individuals actively involved in the corporate decision-making.

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

Panel Regression. Regression technique applied to data that is both cross-sectional and time series in nature.

Profitability. A financial construct indicating how well the management makes investment and financial decisions to generate profits.

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.

Sharpe Ratio. A risk-adjusted index; defined as the average excess return per unit of total risk (Sharpe, 1966).

Size. A symbol measuring firm size. It is calculated as the logarithm of total assets.

Solvency. A financial construct indicating the capital structure of the firm.

Time Effects. It states that there are significant differences over time due to the technological advancements, taste changes, general economic variations.

Tobin’s Q. A value-based 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 (Tobin, 1969).

Treynor Ratio. A risk-adjusted index; defined as the average excess return per unit of systematic risk (Treynor, 1965).
Summary

The importance and necessity of the hospitality financial management were discussed in this chapter. The significance and contribution of an investigation of firm-wise financial constructs and firm performance for the hospitality firms were further illustrated. The terms used throughout this dissertation were defined. Next, a review of related literature is discussed in Chapter 2.
CHAPTER 2

LITERATURE REVIEW

This chapter reviews relevant literature with regard to the relationship between firm performance and firm-wise financial factors. The first section discusses various theoretical and empirical foundations in details with respect to these relationships. The firm performance measures are reviewed in the second section, followed by a summary of the literature that was reviewed.

The Relationships Between Firm-wise Financial Factors and Firm Performance

Financial literature has explored the impacts of common financial characteristics, such as capital structure and dividend policy on firm performance from a micro perspective; that is, financial factors that differ across each firm and are under management’s influence. Reviews of these firm-wise financial factors and their relationships with firm performance follow, beginning with a factor relating to liquidity.

Liquidity

Liquidity measures a firm’s ability to meet its short-term obligations and the quickness and certainty of an asset to be converted into cash at its fair market value (Scott, Martin, Petty, & Keown, 1999). Liquidity is one of the firm’s key asset management strategies to create shareholder value. According to Moyer, McGuigan, and
Kretlow (2001), companies hold liquid assets for a number of reasons. First, because cash flows fluctuate, a firm needs to maintain sufficient amount of liquid assets to run its daily operations, such as paying salaries and wages to employees, repaying liabilities to creditors, governments, suppliers and so forth. Liquid assets help a firm to handle the variations in cash flow. This is a transactional reason. A precautionary approach to owning some extra liquid assets to minimize potential bankruptcy cost is a second motive. Bankruptcy costs work against the shareholders who are the residual claimers on assets in liquidation (Van Horne, 2001). If a firm's liquid assets decrease dramatically, management must make sure that adequate future cash is available to meet the maturing obligations. Any organization that can not meet minimum liquidity requirements would experience great financial difficulty. Third, liquid assets are often held for speculative reasons. Liquid assets can help a firm make quick investment when there is a great market opportunity. Firms can often take cash discounts offered by many suppliers and pay off higher interest expenses with adequate liquid assets. Investment in liquid assets can minimize costly external financing (Kim, Mauer, & Sherman, 1998). Finally, it is easier to determine the value of liquid assets and use them as collateral so that firms with liquid assets can raise funds more readily and under better terms (Haubrich & Santos, 1997). In essence, firms hold liquid assets to control certain shortage costs associated with the lack of adequate liquid assets as liquidity shortage costs inversely relate to liquidity.

Nevertheless, a firm would not maintain too many liquid assets because doing so could also hurt the firm’s development and future performance for several possible reasons. First, more liquid assets may create more severe agency problems than less...
liquid assets (Jensen, 1986). Agency problems occur when the management (the agent) acts in a manner to maximize its own welfare other than the owners of the firm (the principal) because of the separation of the ownership and control in the modern corporate system. It is easier for managers to advance their own interests at the owners’ expense when there is an abundant supply of liquidity assets. Second, liquid assets in general earn relatively low rates of return compared to other assets (Moyer et al., 2001). High liquidity might imply that available resources are not being wisely invested by the management (Borde, 1998). Firms can increase the expected return on assets by minimizing its liquid asset allocation. Third, investment in liquid assets is costly because the firm must pay non-trivial transaction costs to buy and sell liquid assets and because the firm may have higher taxation (Kim et al., 1998). Higher liquidity lowers the firm’s ability to generate more returns; therefore, firms hold only a certain amount of liquid assets to limit the holding costs associated with the excess of liquid assets. Thus, a positive correlation exists between holding costs of liquid assets and liquidity.

In sum, liquidity could have both a positive and negative impact on firm performance. The objective of effective liquidity management is to find an optimal balance between liquid and illiquid assets to enhance firm performance (i.e., minimize the total liquidity costs), being aware of the trade-offs between costs and benefits. In fact, the determination of optimal liquid assets reflects the classic risk versus return relations (Moyer et al., 2001). Larger amounts of liquid assets are associated with lower risks and returns and vice versa. Total liquidity costs consist of both shortage and holding costs of liquid assets. The opposite impacts of between shortage costs and holding costs on liquidity generate the U-shaped relationship between liquidity and its total costs which is
confirmed by Gilmer’s (1985) study. Consequently, there is an inverse U-shaped relationship between liquidity and firm performance as costs are negatively related to performance. The optimal level of liquidity is the amount for which the marginal opportunity cost of liquid assets holdings equals the expected costs of liquidity shortage (Opler, Pinkowitz, Stulz, & Williamson, 1999). Bruinshoofd and Kool (2004) confirm the existence of long-run liquidity targets at the firm level.

There is also empirical evidence with respect to the relationship between liquidity and firm performance. Some studies have suggested a positive relationship. Myers (1977) posited that maintaining excess liquidity may help to reduce the firm’s distress, thus enhancing the firm value. Further, Baskin (1987) provided empirical evidence that liquid assets are used to signal staying power to retaliate against encroachment and to allow firms to rapidly grasp new opportunities. Opler et al. (1999) examined the determinants of liquid assets holdings of publicly traded U.S. firms in the 1971 – 1994 period. They reported evidence that firms with excess liquidity generally have precautionary motives to maximize the shareholder’s wealth which is considered a positive association. In contrast, Shin and Soenen (1998) empirically investigated the relations between liquidity and firm performance using a COMPUSTAT sample of American firms during 1975 – 1994. The relationships were examined using correlation and regression analysis, by industry and working capital intensity. They found a strong negative relation between liquidity and firm performance. The authors thus suggested that lowering liquidity to a reasonable minimum could be one way to increase shareholder value.
Solvency

Solvency measures a firm's capital structure, i.e., the relative percentage between debt and equity instruments used to finance its assets. Solvency assesses a firm's reliance on debt and reflects the firm's ability to meet debt obligation and exposure to the financial risk on a long-term horizon. Finance literature strongly indicates that changes in a firm's capital structure can greatly affect firm value (Pinegar & Wilbricht, 1989). Using debt can significantly amplify the results of the activities undertaken by a firm. A firm's performance can be leveraged from bad to worse or from good to great by using higher levels of debt. Debt and equity each have unique characteristics. Debt financing has tax-deductible benefits at the cost of being embedded with potential financial distress costs. Equity, on the other hand, usually asks for more returns than debt though the original vested funds are retained in the company. The goal of solvency management is to craft a good mixture between debt and equity financing so as to minimize the cost of capital and thereby maximize value of the firm. Managers should fine tune the debt proportion to fulfill such a goal. Further, there are several theories with respect to the capital structure in practice; namely, the optimal (target) capital structure model, the pecking order hypothesis, and the signaling effects proposition.

The optimal capital structure tradeoff theory suggests that cost of capital is negatively related to the tax shield of debt, but positively related with financial risk and agency costs incurred with the use of debt when corporate taxes, financial distress costs and agency costs are included (Moyer et al., 2001). It proposes a U-shaped relationship between a firm's average cost of capital and use of debt. That is, adding debt in the beginning will lower the cost of capital; but the cost of capital will later increase when percentage of
debt in financing mix exceeds a certain point. Such a point is usually referred as target capital structure ratio. The equilibrium point arrives when the marginal cost of additional debt is the same as the marginal benefits of additional debt.

On the other hand, the pecking order hypothesis developed by Myer (1984) argues that a firm's capital structure changes when an imbalance between net cash flows and investment opportunities occurs. The pecking order hypothesis indicates that firms have no particular optimal capital structure and they prefer internal financing (retained earnings) to debt, and finally to external common equity as a last resort (Moyer et al., 2001). A survey conducted by Pinegar and Wilbricht (1989) reports that pecking order theory is more representative of how financing decisions are made in practice. However, as indicated by Van Horne (2001), pecking order is mainly a behavioral explanation of why some companies finance through such orders. The pecking order hypothesis reflects managers' preferences in choosing capital structure.

The real world is characterized by asymmetric information between managers (agents) with more information and shareholders (owners) with less information as a whole. The signal theory described by Ross (1977) implies that a firm with better outlooks can issue more debt to avoid sharing the benefits of the favorable prospects with new shareholders. Unless a firm has a good investment opportunity it would not issue debt because the issue of debt would result in a higher probability of bankruptcy. A firm, therefore, may issue debt to signal to the market that management has perceived great projects, which are expected to generate sufficient cash flows to service the debt, as well as enhance the firm value. Management intentionally links benefits in the best interest of shareholders because issuing debt will affect the market price of the firm and

17

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management compensation package is closely connected with the firm performance. More debts are preferred within the framework of signaling effect theory. Based on the signal theory, a positive relationship is expected between debt levels and firm performance.

Optimal capital structure theory will conventionally hold as an inverted U-shape relationship between solvency and firm performance. The expected sign can be either positive or negative. Adding debt initially will enhance the performance as the benefits of tax shield outweigh the financial distress and agency costs. The trend will reverse when debt reaches a certain optimal point when financial distress and agency costs are soaring. The pecking order hypothesis and signaling effect propositions behaviorally explain why and how some firms finance the resources, which provide important insight into the knowledge of capital structure theory.

Empirical studies have yielded conflicting evidence regarding the relationship between solvency and firm performance. For instance, Grossman and Hart (1986), and Zantout (1997) asserted higher levels of debt usage will be positively associated with higher levels of firm performance. Similarly, Roenfeldt and Cooley (1978), Harris and Raviv (1990) suggested lower financial leverage was significantly associated with lower firm performance. However, John (1993) empirically showed a negative and significant relationship between leverage and a firm's performance using 223 Fortune 500 firms in 1980. Likewise, Capon, Farley, and Hoenig (1990) reported that 90 out of 140 relationships examined in their studies have shown a negative correlation between firm debt level and its performance. The reason is that financial distress costs (bankruptcy costs and agency costs of debt) increase the cost of capital and destroy firm value.
Moreover, the poor performance associated with debt use is because debt holders are assumed to be more risk averse than shareholders which may force managers to abandon all risky projects and cut research and development expenses to be conservative (Capon et al, 1990). Thus, increased leverage could worsen the firm’s financial performance. On the other hand, results from Forster (1996) uphold the traditional capital structure theory that the relation between leverage and firm performance is non-linear, using the panel data of 56 agribusinesses from 1984 to 1993 in the US.

**Activity**

The activity factor measures the effectiveness and efficiency of the management team in using and controlling different firm assets over a certain period of time. Activity indicates how rapidly non cash assets flow through a firm and how quickly these assets generate revenues (Moyer et al., 2001). One objective of financial management is to allocate the best mix among the various asset accounts (Moyer et al., 2001). By comparing the activity indicators for different assets, the firm can assess the effectiveness and efficiency of asset allocation. There is a consensus in regard to the direct positive relationship between activity and firm performance. An increase in effective and efficient use of assets will lead to value incremental in a firm; hence, improving its performance. For example, Roenfeldt and Cooley (1978) confirmed that a lower activity ratio is significantly associated with lower firm performance.

**Growth**

Growth presents an outlook of a firm’s future earning capabilities, which is a key benchmark held by investors and creditors. The purpose of the growth is to create more wealth for the owners through exploring emerging opportunities, improving efficiencies,
withstanding market fluctuations, increasing bargaining power and succeeding in competition with other firms. The growth factor may capture both business cycle and economic development effects. However, Borde (1998) cautions that growth should be carefully managed to ensure both internal structure and control of firm operations. A firm can expand its business through internal growth, external development, or merger and acquisition.

In theory, growth can affect firm value both positively and negatively. Firms with growth capacity might generate increased market share and/or synergy effects, thereby leading to favorable performance. The positive relationship between growth and firm financial performance was tested and suggested by several researchers (Child, 1972; Keats & Hitt, 1988). On the other hand, growth strategies often were criticized for destroying firm value. One possible reason could be that management can increase control, power and compensation through growth with no regard for shareholders' benefits. For example, Hill and Jones (1995) indicate that firms might pursue the growth at the expense of an owner's wealth. Fast-growth firms may be confronted with increased competition and are more sensitive to economic fluctuations (Logue & Merville, 1972). Idol (1978) suggests that investors perceive high growth firms as being more risky. In addition to risk, growth can only bring in an increase in return to a certain point, beyond which firms can not develop further because of the capacity limitation. The rising risk associated with capacity constraints may strain a firm’s limited resources and its ability to structure effective internal controls, thereby destroying firm value. It is the job of management to balance growth and potential risk and seek the proper growth strategy to fit their needs.
Many studies have shown a positive relationship between growth and firm performance. For instance, Roenfeldt and Cooley (1978) suggested lower growth is significantly associated with lower firm performance. In an attempt to explore the relationship between growth and firm value, Varaiya and Kerin (1987) provided support that growth variables are consistently positive in relation to firm value. Such an association was also verified by Capon et al. (1990). After meta-analyzing 88 previously published studies, Capon et al. (1990) concluded that growth has shown a positive relationship to performance. In the hospitality industry, Jekanowski (1999) pointed out growth strategies have helped many restaurant firms sustain their success over the past four decades. Not only does McDonalds strive to achieve visibility in all possible locations, but other firms such as Kentucky Fried Chicken (KFC) and Burger King have also extended their market share and dominance through growth both in the US and overseas. The recent frenzy of mergers and acquisitions within the casino industry might confirm such a perspective.

Alternatively, a number of researchers have warned of dangers of firm growth from market pressures, which lead to damaging firm value in the long run (Fuller & Jensen, 2002; Ghemawat & Ghadar, 2000). Ramezani, Soenen, and Jung (2002) reported empirical evidence that maximizing growth does not necessarily maximize firm value. This conclusion was drawn from the study of using US companies data from 1990-2001. Their findings revealed that shareholder's wealth was a concave function of growth, or a commonly named inverted U-shaped curve. The study further suggests that companies with moderate growth show the highest value creation for their owners. Investors will be sensitive to any firm with dramatic changes in growth. Additionally, according to the
study by Brush, Bromiley, and Hendrickx (2000), the relationship between growth and firm performance could depend on the interaction of a firm’s free cash flow (FCF) and other business situations. Findings showed that growth helps increase firm performance for those firms that are without FCF or with low levels of FCF and without strong governance or owner managed firms with low levels of FCF. In a rare situation, Gupta (1969) observed no significant correlation between growth and performance using US manufacturing data from 1961 to 1962.

**Profitability**

Profitability measures how well management makes investment and financial decisions to generate profits (Moyer et al., 2001). Profits show the past earnings. In addition, profitability is likely to be distorted by data manipulation from accounting “window dressing” effects in accounting convention and tax procedures. Profitability emphasizes internal management efficiency, which reflects managers’ perspectives whereas financial performance echoes the future expectations of existing and potential shareholders.

Theoretically, there should be a direct strong positive relationship between profitability and firm performance in general as expected earnings ultimately reflect the intrinsic stock prices. However, empirical studies provide imperfect results on this issue. Some research suggests that relationship between profitability and firm performance is artificial at best. They cast great doubt on the attempt of correlating profitability and financial performance, by suggesting the relation could be misleading (Sharpe, 1999). O’Connor (1973) applied a stepwise multiple regression to a holdout sample to determine the ability of historical data to forecast financial performance. He concluded that
commonly used financial constructs, including profitability, were not useful to predict firm financial performance. However, most studies have documented a positive relationship (Jacobson, 1987; Varaiya & Kerin, 1987). For example, a study by Hoskisson, Hitt, Johnson, and Moesel (1993) reported such a correlation. Hoskisson et al. (1994) further confirmed that past performance (measured in accounting profitability) was a good predictor of future performance (measured in financial performance measures). They noted that profitability information appeared to be immediately reflected in market performance. Fryxell and Barton (1990) found that relation between profitability and financial performance varies over time and context. Nevertheless, the general perspective of positive correlation between profitability and financial performance may be distorted for certain specific reasons. For example, a seemingly contradictory relation of lower profitability level with relative high stock valuation in the Japanese stock market can be largely explained by some uncommon reasons (Ide, 1996). Their firms concentrated on growth in profit size rather than efficiency. The Japanese government encouraged an export first policy. The interlocking relationship between banks and firms further significantly reduced the risk. In fact, Japanese stocks were really like a quasi fixed income instrument (Ide, 1996). In the US, the internet stock bubble in the late 1990s revealed the huge discrepancy between expectations and reality. Many analysts and investors used the so-called “life value” of a customer technique to determine a valuation based on hopes for future profits which can not be justified by any accounting procedures (Fortune, 1999). In a rare case, a study by Keats and Hitts (1988) reported a significantly negative relationship between profitability and firm performance. The authors explain that financial performance measures react and incorporate the effects
of anticipated positive or negative major events before the actual occurrence. When positive events occur, investors may actually anticipate a downturn because they believe a firm has reached its peak. Thus, profitability and financial performance might differ. In addition, dynamic environments will affect profits negatively and financial performance positively. The collection of these factors may contribute an inverse relationship between profitability and financial performance measures.

**Management Ownership**

According to Jensen and Meckling’s (1976) agency theory, managers may act in their own interests rather than the interests of shareholders. One way to mitigate the agency problem between principal (owners) and agent (managers) is to increase the managerial stock ownership so a manager’s compensation is directly related to firm performance (i.e., stock price). Such an effective compensation contract utilizing managerial ownership can align the goal of managers with that of shareholders in a rational and efficient capital market. Managerial stock ownership can not only align managers’ common interests, thereby tying the managers to the firm, but also provide good incentives for managers with outstanding performance records. This convergence-of-interest hypothesis suggests that firm value will increase in accordance with the augments of managerial ownership. Nevertheless, entrenchment effects will take place when managers hold a large portion of a firm’s stock. Under this circumstance management has the voting power to guarantee their jobs and may pursue non-value-maximizing behavior (Belkaoui & Pavlik, 1992). Two possible arguments can support the notion of entrenchment effects which were pointed out by Sundaramurthy, Rhoades, and Rechner (2005). First, increased share ownership may add extra risk to managers who are usually
risk averse, which may result in risk-reducing behavior that is against the shareholders’ best interest. Second, managers can control many of their own destinies and avoid the takeovers by outsiders by controlling a large portion of a firm’s shares. Thus, there could be a negative relationship between managerial ownership and firm performance.

Empirically, some studies find a significant positive relationship between managerial ownership and firm performance. Kim, Lee, and Francis (1988) randomly selected a sample of 157 firms from the Value Line Investment Survey during 1975 to 1978 and confirmed that firms with high degrees of managerial ownership enjoyed abnormal return to the firms with diffuse ownership. Hudson, Jahera, and Lloyd (1992) further supported the notion that managerial ownership is a significant factor positively related to the stock return. However, other researchers (Lloyd, Jahera & Goldstein, 1986; Tsetsekos & Defusco, 1990) reported an insignificant relationship between them. Moreover, Morck, Shleifer, and Vishny (1988) suggested a nonlinear relationship between managerial ownership and firm performance. A positive followed by a negative and then a positive correlation was presented. McConnell and Servaes (1990) also suggested such a non-monotonic relationship. As concluded by Kesner (1987), the association of managerial holdings on firm performance differs across industries. The results of his study revealed a significant positive relationship exists between managerial ownership and firm performance for high-growth industries, whereas no significant relationship for low growth industries was found.

Institutional Ownership

With a huge stake in all outstanding equity in the US currently (Hayahsi, 2003), institutional investors have become powerful and important in corporate management.
decisions (Brickley, Lease, & Smith, 1998). Two theoretical arguments have evolved in the literature to reveal the relationship between institutional investment and firm performance (Sundaramurthy et al., 2005). The efficiency augmentation view posits a positive relationship for at least two reasons. First, institutional investors typically have obtained through knowledge about the firms they invest in by hiring professionals to manage their vested portfolios with economies of scale. Second, institutional investors have the incentives and expertise in monitoring the managerial behaviors at relative costs. They can express their concerns about firm performance with the management team. In essence, institutional investors represent a group of individual investors with a collective influence to affect and vote on management decisions (Tsai, 2005). Hence, an increase in institutional ownership will enhance the external monitoring and help align management interests with larger ownership’s (i.e., institutional investors) interests. Therefore, a significant and positive correlation between institutional ownership and firm performance exists.

Alternatively, the efficient abatement hypothesis posits a negative relationship between institution investors and firm performance because investors are passive, collusive or myopic (Sundaramurthy et al., 2005). Institutional investors are passive because they have certain legal restrictions designed to control firms (Roe, 1990). Institutional investors may also conspire with firm managers against beneficiaries because they have certain business interests in the firms they invest in (Pound, 1988). Furthermore, institutional investors tend to be myopic and focus mainly on short-term performance (Bushee, 1998).
Additionally, there could be no significant relationship between ownership structure and firm performance because a firm's ownership structure can be endogenously determined to maximize firm value (Demsetz, 1983). Diffuse ownership may aggravate potential agency problems but generate compensating advantages that offset such problems (Demsetz & Villalonga, 2001).

Numerous studies have shown inconclusive results with respect to how institutional ownership may affect firm performance. Agrawal and Knoeber (1996) failed to provide enough evidence to support the positive proposition of institutional ownership on firm performance using a list of 383 Fortune 800 firms in 1987 by both ordinary least square (OLS) and 2 way simultaneous least square (2SLS) regression techniques. By probing the relations between institutional ownership and firm performance with a sample of Australian firms in 1986 and 1989 respectively, Craswell, Taylor, and Saywell (1997) found a non-significant effect of institutional ownership on firm performance after controlling other variables, such as the debt ratio and research and development (R&D) expenditures, to name a few. Clay (2001) investigated 8,951 firms between 1988 and 1999 and found a significantly positive impact of institutional ownership on firm performance both in OLS and 2SLS models. Han and Suk (1998) tested the effect of institutional ownership on firm performance using 301 firms during 1988-1992 and concluded that institutional ownership can positively contribute to firm performance. Other studies, such as McConnell and Servaes' (1990) also confirmed that institutional ownership is a significant and positive determinant of firm performance. On the other hand, some studies found a negative association (Coles & Hesterly, 2000; Graves, 1988).
Dividend Policy

Dividend decisions are one of three major financial decisions that any firm will encounter. Dividend policy determines how to distribute firm earnings. Earnings can be retained and reinvested in the company to stimulate the future growth, hence influencing the future share values of its common stock. Alternatively, earnings can be distributed to shareholders as current returns.

According to Gordon and Shapiro (1956) and Gordon (1963), the so-called “bird-in-the-hand” theory posits that firms distribute dividend to reduce investors’ uncertainty, causing a low discount rate to firms’ future earnings, thereby increasing firms’ values (Moyer et al., 2001). Conversely, firms that do not pay out dividend could raise investors’ uncertainty. As a result, the discount rate will increase and the stock prices will decrease. A cut in dividend payment usually results in decline in stock price because it signals and conveys the information regarding the potential unreliability of future earnings. Agency theory also suggests that dividend payouts can reduce agency costs between management and shareholders because the payment of dividend cut the available amounts of retained earnings for management’s discretionary use (Moyer et al., 2001). This scenario was conjectured by Jensen (1986) as a free cash flow hypothesis. In other words, more dividend payouts or less free cash flow is usually associated with better firm performance. Thus, a positive relationship between dividend payouts and firm performance is expected from both agency theory and “bird-in-hand-theory”.

However, some growth companies have maintained high earnings to obtain lower capital costs according to the pecking order hypothesis in the capital structure as mentioned previously. Further, firms have increased financial flexibility which enables
them to adopt the best strategy to enhance value. Firms that do not distribute cash dividend may also signal to investors that the company holds a very positive expectation regarding earnings and cash flow in the future which is at least better than the expected future market returns were the dividend distributed in cash (Moyer et al., 2001). Furthermore, dividend retention is preferred over payouts considering that personal tax rate on capital gains is less than that on cash dividend income (Van Horne, 2001). A dividend-paying stock needs to provide a higher expected before tax return for investors to accept dividends. Thus, these arguments will lead to a negative correlation between dividend payouts and firm performance.

The competing theoretical arguments of dividend policy upon firm performance yield mixed empirical evidence. Many recent studies have found that dividend policies have no significant or neural impact on stock price (Christie, 1990; Benartzi, Michaely, & Thaler, 1997). Alternatively, Naranjo, Nimalendran, and Ryngaert (1998) reported a significant positive relationship between dividend yield and stock returns, which implies a negative effect of dividend payout on firm value. Conversely, using a sample of hotel REITs and non-REIT firms from 1993 to 1999, Mooradian and Yang (2001) suggested a positive impact of dividend payout on firm performance.

Business Diversification

Over the last four decades, the impact of business diversification on firm performance has drawn voluminous attention from many researchers in a number of business disciplines, including industrial economics, strategic management, and finance. Several theoretical arguments resulted with respect to the reason why firms diversify (Montgomery, 1994). The first relates to available resources which focus on a firm’s
internal resources and capabilities. The second deals with market power advantages. Both resource building and market power are consistent with profit maximization. The third is involved with agency theory. Divergent interests between management and shareholders and the existence of asymmetric information may contribute to the diversification strategies that could shrink firm value. According to Berger and Ofek (1995), diversification has both value enhancing and value reducing effects theoretically and there is an unclear direction about the overall effect of diversification on firm performance. On one hand, diversification across industries and countries can stabilize the return and lessen the risk. For example, Shaked (1986) posited that multi-national firms tend to have both lower systematic and unsystematic risk than domestic firms. Belkaoui and Pavlik (1992) examined 228 Fortune 500 firms and indicate that diversification can enhance firm performance. However, by investing the funds in a diversified portfolio, shareholders can manufacture such a combination on their own easier and cheaper (Brealey, Myers, & Allen, 2006). A well diversified firm could have an efficient internal market for capital and labor. Free cash flow from mature industries (i.e., cash cows) can be directed to the growth industries within the firm, thereby lowering financing costs (Brealey et al., 2006). In addition, the benefits of diversification may also include greater operating efficiency, less likeliness to forego positive net present value projects, greater debt capacity and favorable taxes (Berger & Ofek, 1995). On the other hand, some researchers have suggested the adverse value consequences of diversification (Singh, Mathur, Gleason, & Etebari, 2001). The rising capital market sophistication, reduced regulation, and more transparent information have lowered the benefits of diversification (Markides, 1995). The costs of diversification may consist of
the use of increased resources to undertake value-decreasing projects, cross-subsidies of poor segments from better-performing segments, and misallocation of incentives among different segments in the firm (Berger & Ofek, 1995). Further, over-diversification could generate negative synergy and diseconomies of scope which ultimately destroy firm value (Singh et al., 2001).

Researchers have tried to assess whether business diversification can add or destroy firm value empirically. Some studies have contended that business diversification may diminish firm value (Bettis, 1981; Comment & Jarrell, 1994; Lang & Stulz, 1994). Berger and Ofek (1995) estimated that diversification obliterates 13-15 percent firm value on average during 1986 to 1991, which might be due to the overinvestment and misallocation of investment. De (1992), however, failed to find a significant correlation between business diversification and firm value. In contrast, other researchers have indicated a positive relationship (Keats & Hitt, 1988). For instance, Campa and Kedia (2002) and Villalonga (2004) provided evidence that diversification may enhance shareholder wealth. Moreover, Palich, Cardinal, and Miller (2000) synthesized findings from 55 previously published articles addressing the relationship between business diversification and firm performance. Their results indicated a curvilinear model (inverted U-shape) so that moderate levels of business diversification yield higher levels of firm performance.

**Geographical Diversification**

Firms often diversify geographically to take advantage of their excess capacity of resources to benefit from scales of economy, as managers know and learn the knowledge and skills over time (Kor & Leblebici, 2005). Essentially, as a firm tries to realize the
benefits of economies of scope from client-specific knowledge and other common tangible and intangible resources, partners absorb the internal transaction and adjustment costs of coordinating and performing in multiple places (Helfat & Eisenhardt, 2004). In addition, Capar and Kotabe (2003) enumerated several possible reasons why firms diversify geographically as: cheap labor costs; market access and opportunities; standardizing products and services; allocating resources more effectively and efficiently; and increased bargaining power. On the other hand, a high level of geographical diversification will increase operation costs according to transaction cost theory (Hitt, Hoskisson, & Kim, 1997). Factors such as logistics, trade barriers, culture heterogeneity, government regulation, trade laws, currency fluctuations, organizational complexity, information and transaction costs will dampen firm development and affect firm performance negatively (Capar & Kotabe, 2003).

Empirical evidence has generated various results, indicating there are several general models in the existing research stream about this topic. The first suggests geographic diversification is associated with linear and positive shareholder return (Bodnar, Tang, & Weintrop, 1998; Tallman & Li, 1996). In contrast, a second view reflects a negative relationship between diversification and firm value. For example, Denis, Denis, and Yost (2002) demonstrated global diversification destroyed shareholder value by 18 percent. A third viewpoint indicates an insignificant relationship (Errunza & Senbet, 1984). Recently, many studies have revealed that the relationship between geographic dispersion and firm performance is non-monotonic. In particular, a fourth perspective contends that an inverse U-shape curvilinear relationship exists (Gomes & Ramaswamy, 1999; Hitt et al., 1997), where performance increases up to a certain point and then goes down. The
slope of the curve is initially positive and after reaching an apex, becomes negative.

Firms can achieve economies of scale, scope, and location if they undertake their initial expansion in a homogenous environment. Later, when the firms enter the heterogeneous markets, performance will go down because the increased organizational and environmental complexity will elevate the operating costs (Li, 2005). On the other hand, a fifth opinion has found a U-shape relationship between geographical dispersion and firm performance (Ruigrok & Wagner, 2003), which is just the reverse of the fourth perspective. Capar and Kotabe (2003) also support a U-shape curvilinear relationship based on 81 major German service firms. Firms may encounter high adaptation costs before they can enjoy the benefits of geographical diversification (Li, 2005).

**Size**

Size is a mediating factor that needs to be accounted for in this study. The relationship between firm-wise factor and performance will vary systematically, given the different levels of firm size. Different explanations coexist with respect to the effect of firm size on firm performance. On one hand, large firms tend to possess more resources and better chances to take advantage of the environment and capital market; i.e., to expand the business during an economic boom or/and withstand market fluctuations during an economic downturn. In addition, firm may gain from an increase in size due to more reasonable economies of scale, more promotional opportunities, improved efficiency in assets, capital, technology management and other operational synergies. However, increased size may aggravate corporate red tape and result in a dysfunction of managing the personnel and other resources. Small firms are more flexible to adapt to ever-changing demands. The Fama and French (1993) model indicates size
will negatively and significantly affect firm performance. These two conflicting propositions suggest that the relationship between firm size and performance depends on specific situations. Thus, in practice, firm size usually has to be controlled in order to compare firm performance (Hoskisson, Johnson, & Moesel, 1994; Keats & Hitt, 1988).

Some empirical research also yielded mixed results. Gupta (1969) observed smaller firms tend to have a lower performance. Keating (1997) also suggested that firm size is positively related to firm performance. However, Miller (1987) investigated different industries and reports that productivity is unrelated to firm size in the service industries. In Wu (2006)'s meta analysis of relationship among firm social performance, financial performance and firm size, the author revealed that there is no significant relationship between firm size and financial performance.

As reviewed by Obi (1994), total assets are the second best indicator for firm size, just after the market value of firm's equity. Since market value is closely associated with this study’s dependent variable (i.e., financial performance), total assets in its logarithm form is chosen to condense the extremely large value of a variable. This approach is a standard practice to develop a proxy for firm size.

**Industry Effects**

Each industry has its own distinct characteristics. Some are labor intensive while others are capital intensive. Some are fast growing businesses while others exist in already saturated markets. In an attempt to estimate the relative importance of industry, focus, and share effects on firm performance, Wernerfelt and Montgomery (1988) confirm that industry effects are the major factors of firm success. That is to say, it is deemed to be appropriate to compare firm performance within a homogeneous industry,
rather than a heterogeneous group. Further, Hawawini, Subramanian, and Verdin (2003) find that a significant proportion of variation in firm factors is due to the presence of a few exceptional firms in any industry. In other words, for most ordinary firms, the industry effects appear to be more important for performance than firm-specific factors. Lancaster, Stevens, and Jennings (1999) conclude that “industry effects are found in capital structure, risk, returns, and financial ratio pattern” (p.43). Two major sectors within the hospitality industry are restaurants and hotels (including casino hotels), which are the focus in the study. A dichotomous variable will be assigned to describe these two sectors.

To reiterate, many firm-wise financial factors, (i.e., liquidity, solvency, activity, growth, profitability, managerial ownership, institutional ownership, dividend policy, business diversification and geographical diversification) have appeared in the literature that could affect the firm market performance, with size and industry effects as control variables.

Firm Performance Measures Review

Only financial market performance measures will be used in this study to evaluate hospitality firm performance as these data are objective, direct and available. Firm performance measures are obtained from the stock market data, based on the firm’s future expected earnings. From a theoretical perspective, firm performance measures express the expected value of future cash flows and may affect firm’s outlook in the long run. In addition, these firm performance measures are thought to be robust to the management practices and accounting conventions under the efficient market hypothesis. Among a
substantial number of firm performance measures, Tobin's Q, as well as some other risk-adjusted performance measures, such as the Treynor ratio and the Sharpe ratio, are also widely used in the literature.

Tobin's Q is defined as the firm's market value divided by the replacement cost of its assets, which is forward-looking, risk adjusted, and less susceptible to changes in accounting practices (Montgomery & Wernerfelt, 1988; Tobin, 1969). Tobin's Q reflects the market's prediction of the returns generated per dollar of investment in corporate assets (Landsman & Shapiro, 1995) and addresses growing concerns over the limitation of accounting measures (Fisher & McGowan, 1983). When the value of Tobin's Q is larger than one, a firm is worth more than the cost, meaning excess profits are being earned and these profits are above the level necessary to keep the firm in the industry (Lindenberg & Ross, 1981). According to Lloyd and Jahera (1994), Tobin's Q takes the advantage of minimizing distortions caused by tax laws and accounting procedures often related with accounting measures. Tobin's Q measures firm performance involving investors' attitudes (Demsetz & Villalonga, 2001). Over the past several decades, many researchers have devised different formulas to measure Tobin's Q: L-R Q (Lindenberg & Ross, 1981); Approximate Q (Chung & Pruitt, 1994); and Simple Q (Perfect & Wiles, 1994), to name just a few. In this study, a Proxy Q (Gompers, Ishii, & Metrick, 2003) will be adopted to measure Tobin's Q for its simplicity and availability of data. Using the Proxy Q can avoid possible distortions from the estimation of replacement costs of calculating Tobin's Q (Clay, 2001, Kaplan & Zingales, 1997). Proxy Q can be operationally defined as:
Proxy $Q = \frac{(\text{ASSET} + \text{EQUITY} - (\text{CE} + \text{DT}))}{\text{ASSET}}$

where:

$\text{ASSET}$: the book value of total assets;

$\text{EQUITY}$: the market value of equity;

$\text{CE}$: the book value of common equity; and,

$\text{DT}$: deferred taxes.

Kaplan and Zingales (1997), Gompers et al. (2003), and Clay (2001) also use this Proxy $Q$ to measure firm performance in their studies.

Four portfolio performance indexes, namely Treynor ratio, Sharpe ratio, Jensen ratio, and Appraisal ratio, have been proposed to measure financial performance on a risk-adjusted basis (Reilly & Brown, 1999). Two of these measures (Treynor ratio and Jensen ratio) consider only systematic risk as relevant risk factor whereas another two of measures (Sharpe ratio and Appraisal ratio) include total risk as a risk factor. Numerous previous studies have employed these measures (Dubofsky & Varadarajan, 1987; Hoskisson et al., 1994; Michel & Shaked, 1984). These four measures are defined and discussed below.

(1) Treynor ratio (Treynor, 1965). This ratio is defined as:

$$PR_T = \frac{R_{p,t} - R_{f,t}}{\beta_{p,t}}$$

where:

$PR_T$ is the Treynor performance ratio;

$R_{p,t}$ is the average rate of return for stock $p$ at time $t$;

$R_{f,t}$ is the average rate of risk free return at time $t$; and,

$\beta_{p,t}$ is the beta for stock $p$ at time $t$. 
The return for bearing risk, or the excess return over risk-free rate, equals the portfolio return \( R_{p,t} \) minus the risk-free return \( R_{f,t} \) in the numerator. Beta \( \beta_{p,t} \) is the measure of a portfolio's systematic risk in the denominator. The Treynor ratio is based on the Capital Assets Pricing Model (CAPM) (Lintner, 1965; Sharpe, 1964). The ratio implicitly assumes a completely diversified portfolio and considers only the systematic risk or Beta as the relevant risk in performance measurement within the CPAM framework. The Treynor ratio is an index of the average excess return per unit of systematic risk. It is thus a reliable performance measure for a well-diversified portfolio (Treynor, 1965). Evidently, the higher \( PR_T \), the better the firm’s performance.

(2) Sharpe ratio (Sharpe, 1966). This ratio is expressed as:

\[
PR_S = \frac{R_{p,t} - R_{f,t}}{\sigma_{p,t}}
\]

where:

- \( PR_S \) is the Sharpe performance ratio;
- \( R_{p,t} \) is the average rate of return for portfolio \( p \) at time \( t \);
- \( R_{f,t} \) is the average rate of risk-free return at time \( t \); and,
- \( \sigma_{p,t} \) is the standard deviation for portfolio \( p \) at time \( t \).

The Sharpe ratio divides portfolio risk premium, namely, the difference between the portfolio return \( R_{p,t} \) minus the risk-free rate \( R_{f,t} \) by its standard deviation or the total risk. The Sharpe ratio uses the stock's standard deviation for risk measurement, so it considers the total risk rather than just the systematic risk because investors may not hold a well-diversified portfolio. Unsystematic risk is pertinent in the formation of the Sharpe ratio, which goes beyond the CAPM model. This ratio shows the average excess return per unit of total risk and measures the reward to total volatility trade-off. As the Sharpe
ratio utilizes portfolio standard deviation as relevant risk, it is an appropriate measure for both well-diversified and poorly-diversified portfolios (Sharpe, 1966). Theoretically, a larger $PR_s$ indicates a better portfolio performance for the reason that total risk may be rewarded with relative larger excess return.

(3) Jensen ratio (Jensen, 1968). The Jensen ratio is contained in the equation below:

$$(R_{p,t} - R_{f,t}) = \alpha_{p,t} + \beta_{p} (R_{m,t} - R_{f,t}) + \epsilon_{p,t}$$

where:

$\alpha_{p,t}$ is the Jensen performance ratio;
$\beta_{p}$ is the beta or systematic risk for portfolio $p$;
$R_{p,t}$ is the average rate of return for portfolio $p$ at time $t$;
$R_{f,t}$ is the average rate of risk-free return at time $t$;
$R_{m,t}$ is the average rate of market portfolio at time $t$; and,
$\epsilon_{p,t}$ is the random error terms with $E(\epsilon_{p,t}) = 0$.

The Jensen ratio ($\alpha_{p,t}$), like the Treynor ratio, is also based on the CAPM model that assumes systematic risk, or beta, as the only relevant risk. As shown in the equation above, the Jensen ratio is essentially represented by the intercept in the model that has the excess rates of return on the portfolio over the risk-free return (dependant variable) regressed against the excess rates of return on the market over the risk-free return (independent variable). While a significant and positive $\alpha_{p,t}$ indicates a portfolio is outperforming against the market, a significant but negative $\alpha_{p,t}$ is a sign of its underperformance. Similar to the Treynor ratio, the Jenson ratio is an appropriate performance measure for a well-diversified portfolio (Jensen, 1968).

(4) Appraisal ratio (Treynor & Black, 1973; Goodwin, 1998). This ratio is defined as below:
\[ PR_A = \frac{R_{p,t} - R_{m,t}}{\sigma_{p-m,t}} \]

where:

- \( PR_A \) is the Appraisal performance ratio;
- \( R_{p,t} \) is the average rate of return for portfolio \( p \) at time \( t \);
- \( R_{m,t} \) is the average rate of market return at time \( t \); and,
- \( \sigma_{p-m,t} \) is the standard deviation of excess return for portfolio \( p \) at time \( t \).

The appraisal ratio, also known as the information ratio, equals the mean of the portfolio’s excess rates of return (i.e., difference between portfolio and market return) on the portfolio over the market return against its corresponding standard deviation. The numerator represents the excess return whereas the denominator indicates the unsystematic risk associated with the pursuit of the excess return (Goodwin, 1998). This ratio indicates the average excess return per unit of volatility in excess return. The Appraisal ratio is a good measure for all kinds of portfolios, including well-diversified and less-diversified portfolios (Goodwin, 1998).

For all these ratios, firms demonstrating a higher, positive value should have a greater financial accomplishment. In this study, only the Tobin's Q, the Sharpe and the Treynor ratios will be adopted to measure firm performance, as each of them measures value-based, total risk-adjusted and systematic risk-adjusted performance, correspondingly.

Summary

Hypothetical arguments and empirical evidence on the relationship between firm-wise financial factors and firm performance were presented in Chapter 2. Major firm financial performance measures were also discussed. The review of related financial
literature theoretically directs the model construction in this study to examine these relationships in the hospitality industry. The following chapter will present the research design and methodology for this study.
CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

The literature review in Chapter 2 provides both theoretical and empirical foundations for using a multiple regression technique to examine the relationship between firm-wise financial factors and firm performance in this study. In particular, panel regression analysis will be performed because it relates regression techniques with panel data, of which are both cross-sectional and time-series. The first section of this chapter will present several hypotheses and a model constructed for this study, and the following sections will discuss the panel regression method and its underlying assumptions, and then demonstrate how to operationalize the model with a sample and data collection.

Hypotheses

The following hypotheses will be tested in this study, which are derived from both the research questions stated in Chapter 1 and the literature review in Chapter 2.

HYPOTHESIS I: The investigated firm-wise financial factors will have impacts on firm performance in terms of value-based return in the restaurant sector;

HYPOTHESIS II: The investigated firm-wise financial factors will have impacts on firm performance in terms of total risk-adjusted return in the restaurant sector;

HYPOTHESIS III: The investigated firm-wise financial factors will have impacts on firm performance in terms of systematic risk-adjusted return in the restaurant sector;
HYPOTHESIS IV: The investigated firm-wise financial factors will have impacts on firm performance in terms of value-based return in the hotel sector;

HYPOTHESIS V: The investigated firm-wise financial factors will have impacts on firm performance in terms of total risk-adjusted return in the hotel sector;

HYPOTHESIS VI: The investigated firm-wise financial factors will have impacts on firm performance in terms of systematic risk-adjusted return in the hotel sector.

The Proposed Model

In consideration of both research questions and the related literature that was discussed in Chapter 2, the following equation [Eq (1)] is proposed to investigate the relationship between firm-wise financial factors and performance. Firm performance is the dependent variable and different firm-specific financial factors and control variables are the independent variables.

\[ Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \epsilon \quad (1) \]

Where:

\( Y \): firm performance (FP);
\( X_i \): liquidity (L), solvency (S), activity (A), growth (G), profitability (P), dividend payout (D), business diversification (BD), geographical diversification (GD), log of total assets (SIZE), respectively; and SIZE is a control variable;
\( \beta_0 \): constant;
\( \beta_i \): coefficients of \( X_1 \ldots X_9 \); and,
\( \epsilon \): error term.
A graphical representation of the proposed linear model is presented in Figure 1.

![Graphical representation of the proposed linear model](image)

Figure 1. The proposed linear model.


Here, different firm performance measures (Tobin’s Q, Sharpe ratio, and Treynor ratio) will be entered respectively as the dependent variable in order to capture firm performance from various perspectives (value-based return, total risk-adjusted return, and systematic risk-adjusted return). This model will be tested for the restaurant and hotel sectors separately to account for possible industry effects. Many hospitality firms have not paid out dividends, nor implemented either business or geographical diversification during this investigated time span (i.e., 2000-2004); hence, data of the aforementioned factors were measured dichotomously. Instead of asking how much these factors could contribute to firm performance, this study attempts to inquire whether the existence of
these factors made significant differences in financial performance of the hospitality firms. Institutional ownership and managerial ownership will not be examined in this study due to their being unavailable in the financial databases. The signs of the coefficients of all independent variables are not forecasted beforehand except the factors of activity and profitability due to the fact that many contradictory theories about their relationship with firm performance coexisted in the literature. The expected signs of the coefficients of activity and profitability variables are both positive. Higher values of activity and profitability factors would be generally considered as better for firm performance as discussed in Chapter 2.

Panel Regression and its Assumptions

Panel Regression

Observations on many individual economic units, such as firms, over a period of time comprise a panel, cross-sectional time-series or longitudinal data set (Wooldridge, 2002). Panel data are different from pure cross-section data and pure time-series data. Instead, panel data analysis has both a spatial and temporal dimension. The spatial dimension involves a group of cross-sectional units of samples, such as individuals and firms. The temporal dimension relates to the variables of these cross-sectional groups changing over a period of time. Panel data entail the same responding units to be measured at different time so that data are dependent. Pooled data, on the other hand, usually take different samples over the time and are assumed to be independent. A balanced panel exists when the data set has no missing values. If there are some missing values in the data set, it is called an unbalanced panel.
Hsiao (2003) cites literature documenting several advantages of adopting panel data. Firstly, panel data usually contain a larger number of observations than would cross-sectional or time-series data, increasing the degrees of freedom and reducing the possible multicollinearity among explanatory variables, thereby improving the efficiency and reliability of model estimates. Secondly, panel data allow a researcher to analyze a number of dynamic relationships which cannot be addressed using solely cross-sectional data. Similarly, panel data allow one to investigate cross-sectional relations that strictly time-series data prohibit. It allows testing or controlling for within subject change over time for aggregate data. It provides important detail that aggregated time-series data overlook. Thirdly, panel data allow controlling the effects of missing or unobserved variables in a more natural way. Omitted variables may lead to changes in time-series and cross-section intercepts. For instance, firms may have latent (i.e., unobservable) characteristics (e.g., changes in technology, tastes, or business cycle conditions) that remain constant among units, but differ over time. With panel data, it is possible to control for such types of omitted variables by observing changes in the dependent variable over time (Panel Data, 2006). Therefore, the risk associated with an under-specified model is greatly mitigated. Finally, panel data allow for more accurate predictions for individual outcomes than time series data alone. The major disadvantage of panel data analysis is the increased complexity in analysis and interpretations (Hsiao, 2003).

Panel data has both a cross-sectional and time-series dimension. Therefore, two types of perspectives come into play with respect to the differences from either the cross-sectional dimension or time-series dimension. When the time dimension is assumed to be
fixed while the cross-sectional dimension is assumed to be different, it is called unit effects model. On the other hand, switching the dimensions will result in time effects model (Park, 2005). Unit effects model considers each unit has heterogeneous features, such as location, which are either omitted or unobservable. In converse, time effects model regards different time has unique dynamics, which plays an important role to explain the variance in the model. Generally speaking, the results under these 2 perspectives are fairly different due to their different underlying assumptions.

Traditionally the approach in panel data regression has been the unit effects model for two obvious reasons. First, most units in a panel are very different for many unobservable or immeasurable factors despite these units may come from a homogenous group. Second, time frame in a panel data set tends to be relative short, say, 5 to 10 years. The changes during the period usually are trivial, if not minimal, which can often be neglected. Nevertheless, in this study, both unit effects and time effects model are examined to ensure the rigors of the study.

As far as the model is concerned, there are several types of panel data models in the literature: constant coefficients models, fixed effects models, and random effects models (Yaffee, 2003). These are discussed next.

The constant coefficients model is the simplest one because it assumes constant coefficients in both intercepts and slopes and estimates a single equation for all cross-section and time-series. Because there are no spatial or temporal effects in constant coefficient models, the analyst can pool the data to run a normal ordinary least square (OLS) regression (Yaffee, 2003). For this reason the constant coefficients model is also called the pooled regression model. [Eq (1)] mathematically represents this constant
coefficients model (i.e., OLS). However, such a strong assumption that neither spatial nor
temporal effects are significant is rare.

The fixed effects model assumes that each cross-section unit has a unique intercept
which remains the same for all years, and each time series has its own intercept which
remains constant across units. The fixed effects model has the same slopes and constant
variance (error term) but intercepts differ across cross-sectional units or over time (Park,
2005). The fixed effects regression controls for the effects of omitted variables (i.e., error
term) which either differ across units or over time. The changes in the variables across
units or over time thus can be used to estimate the effects of independent variables on the
dependent variable. Conceptually, the fixed effects model is equivalent to creating a set
of dummy variables for each unit to control for differences among units or a group of
time dummy variables to control for differences over time. Thus, the fixed effects models
use an OLS estimation method, also known as the least-squares dummy variable models.
Mathematically, fixed effects models can be written as [Eq (2)] with unit effects, or as
[Eq (3)] with time effects.

$$ Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \sum_{j=1}^{N} \gamma_j W_j + \epsilon \quad (2) $$

$$ Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \sum_{t=1}^{T} \gamma_t Z_t + \epsilon \quad (3) $$

Where

$ Y $ : firm performance (FP);

$ X_1,...,X_9 $ : liquidity (L), solvency (S), activity (A), growth (G), profitability (P), dividend
payout (D), business diversification (BD), geographical diversification (GD), log of total
assets (SIZE);
\( \beta_0 \): constant;
\( \beta_1 \)– \( \beta_9 \): coefficient;
\( \gamma_j \) or \( \gamma_i \): coefficient;
\( W_j \): unit effects dummy variables;
\( Z_j \): time effects dummy variables;
\( T \): the number of years;
\( N \): the number of firms; and,
\( \epsilon \): error term.

The drawback of the fixed effects model is that it may use too many dummy variables, which can lower the statistical power and yield multicollinearity problems (Yaffee, 2003).

The random effects regression model estimates variance components (error term) for units or time periods with assumptions of the same intercept and slopes (Park, 2005). Therefore, it is also called error component model. This model is estimated by either generalized least squares (GLS) when the variance structure is known, or feasible generalized least squares (FGLS) when the variance matrix is unknown (Wooldridge, 2002). The random effects model can be used to mitigate the potential heteroscedasticity problem which might be associated with the OLS. In fact, weight-least squares (WLS), as part of GLS/FGLS models, is often used to solve heteroscedasticity problem. The random effects models provide greater statistical power and parsimony, but they rely on a different assumption that the error term is not correlated with the independent variables (Yaffee, 2003). Otherwise, the random effects model will be biased even it is efficient. Conceptually, fixed effects model examines how the unit and/or time affect the intercept,
assuming the constant slopes and variance across the units (Park, 2005). The random effects model analyzes error variance structures affected by the unit and/or time, assuming the same slopes and intercept (Park, 2005). Random effects models can be mathematically expressed as [Eq (4)] for unit effects, and as [Eq (5)] for time effects.

\[ Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \varepsilon \text{ whereas } \varepsilon = \mu_i + e (i = 1, \ldots, N) \] (4)

\[ Y = \beta_0 + \sum_{i=1}^{9} \beta_i X_i + \varepsilon \text{ whereas } \varepsilon = \mu_i + e (t = 1, \ldots, T) \] (5)

where

\( Y \): firm performance (FP);

\( X_1 \ldots X_9 \): liquidity (L), solvency (S), activity (A), growth (G), profitability (P), dividend payout (D), business diversification (BD), geographical diversification (GD), log of total assets (SIZE), respectively;

\( \beta_0 \): constant;

\( \beta_1 \text{ to } \beta_9 \): coefficient;

\( e \): general total error term;

\( \mu_i \) or \( \mu_t \): unobservable unit effects or time effects; and,

\( e \): the remainder error term.

Statistically, the fixed effects model is always a good way to start with panel data, since it will provide consistent results, but it may not be the most efficient model to use (Panel Data, 2006). The random effects model, on the other hand, will generate better P-values as it is a more efficient way to estimate the model (Panel Data, 2006). Thus, the random effects model is preferred given these statistical justifications. Practically, dummy variables play different roles in fixed effects and random effects models. It is a
fixed effects model if they are treated as a part of the intercept. The random effects model considers dummy variables as an error term (Park, 2005). Park (2005) summarizes the differences between fixed effects and random effects models in Table 1.

Table 1

**Fixed Effects and Random Effects Models**

<table>
<thead>
<tr>
<th></th>
<th>Fixed Effects Model</th>
<th>Random Effects Model</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Functional form</strong></td>
<td>( y_{it} = (\alpha + \mu_i) + X'<em>{it} \beta + v</em>{it} )</td>
<td>( y_{it} = \alpha + X'<em>{it} \beta + (\mu_i + v</em>{it}) )</td>
</tr>
<tr>
<td><strong>Intercepts</strong></td>
<td>Varying across groups and/or time</td>
<td>Constant</td>
</tr>
<tr>
<td><strong>Error variances</strong></td>
<td>Constant</td>
<td>Varying across groups and/or time</td>
</tr>
<tr>
<td><strong>Slopes</strong></td>
<td>Constant</td>
<td>Constant</td>
</tr>
<tr>
<td><strong>Hypothesis test for model appropriateness over OLS</strong></td>
<td>Incremental F test</td>
<td>Breusch-Pagan LM test</td>
</tr>
</tbody>
</table>

* * \( v_u \sim IID(0, \delta^2) \); IID stands for independent identically distributed: adapted from Park (2005).

Several tests will be employed to determine which model is most appropriate and the test flows are illustrated in Figure 2. Pooled OLS regression will be run first. From two separated perspectives (i.e., unit effects and time effects), the Hausman Specification Test will be performed to determine which model, fixed effects or random effects is appropriate under either unit effects or time effects conditions. Fixed effects and random effects models analyses, as well as their significance tests (i.e., incremental F test and the
Breusch and Pagan LM test) will then be conducted at the end. The results of appropriate models will be presented and discussed under both unit- and time-effects viewpoints.

Figure 2. Model test procedures flow chart.

An incremental F test (a simple Chow test), based on loss of goodness-of-fit, is used to determine whether a fixed effects model is better than an OLS regression (Park, 2005; Baltagi, 2005). It tests the significance of these dummy variables, i.e.,

\[ H_0: \mu_1 = \mu_2 = \ldots = \mu_{n-1} = 0 \]

or

\[ H_0: \tau_1 = \tau_2 = \ldots = \tau_{t-1} = 0 \] (Baltagi, 2005). If the null hypothesis is rejected, the fixed effects model is preferred. The Breusch-Pagan Lagrange Multiplier (LM) test (Breusch & Pagan, 1980) can check whether the random effects model performs better than OLS regression (Park, 2005). The LM is distributed as chi-square with one degree of freedom with its null hypothesis being that cross-sectional variance components are zero (Park, 2005). If the null hypothesis is not rejected, the normal OLS is appropriate. The Hausman specification test (Hausman, 1978) is usually used to check whether fixed effect or random effects models are most appropriate. In particular, it checks a tradeoff between a more efficient model (random effects) and a less
efficient but more consistent model (fixed effects) to ensure that efficient model can produce consistent results (Park, 2005). The Hausman test investigates the null hypothesis that the coefficients estimated by the efficient effects estimator are the same as the ones estimated by the consistent fixed effects estimator. A significant P-value will suggest a fixed effects model, whereas an insignificant P-value indicates it is safe to use a random effects model.

Assumptions Checking

Before data analysis, data screening and assumption checks are necessary for any analysis using inferential statistics. Most statistics are built on certain ideal assumptions and limitations. After outliers are filtered out of the dataset, checking assumptions will follow. Panel regression analysis follows assumptions similar to the normal multiple regression technique. The fixed effects model also applies the same OLS estimation as the only difference between the normal multiple regression and the fixed effects model is that the dummies are added in the fixed effects model to capture the differences among the cross-sectional units or the time dynamics. The random effects model differs from the normal multiple regression in the assumptions that it does not have the requirement of homoscedasticity but the correlations between the error term and independent variables are not statistically significantly different from 0 (Park, 2005). In other words, the error term and independent variables are assumed to be truly independent.

Normality

The underlying assumption of multiple regression analysis is the multivariate normality. Multivariate normality is the assumption that all variables and all combinations of the variables are normally distributed. Multivariate normality is difficult
to test and many statistical software packages do not include such procedures. However in regression, when the assumption is met the residuals are normally distributed, the differences between predicted and actual scores (the errors) are symmetrically distributed around a mean of zero and there is no pattern to the errors (Tabachnick & Fidell, 2001). Therefore, normality can be checked through the scatter plots of the predicted dependent variable and actual residuals in regression analysis. As long as there is adequate sample size, the normality assumption will not be a serious concern as the central limit theorem will hold for a relatively large sample size (Hair, Anderson, Tatham, & Black, 1998).

Linearity

An implicit assumption of many statistical tests (including regression techniques) based on correlation measures of association is linearity (Hair et al, 1998). If the “true” relation is not linear, a linear mode may, but will not always, provide a reasonable approximation. Linearity can be examined by inspecting scatter plots of actual residuals versus the predicted dependent variable in regression analysis. If the linearity assumption is violated, a transformation may be used to mitigate the problem.

Multicollinearity

Multicollinearity is a problem that occurs when variables are too highly correlated (Tabachnick & Fidell, 2001). Statistically, multicollinearity usually influences regression results by inflating the standard errors and thereby creating a bias toward overestimating the coefficients. Tolerance or the variance inflation factor (VIF) can be used to check for multicollinearity. In general dropping some variables out of the analysis which may have caused the multicollinearity can often resolve this issue.

Independence of the Error Term
Traditional OLS regression assumes that the error term is independent. Panel data usually have quite strong dependencies among errors by including the temporal dimension in the data. As such, the OLS model is no longer the optimal method of estimation because the standard errors are biased downward (Hsiao, 2003). In addition, the fact that those current values of a certain variable might depend on the past values also raises the potential problem of autocorrelation. If the errors have positive autocorrelation, panel regression tends to underestimate the variability in the coefficient, the standard errors will be smaller than they should be and F tests and the $R^2$ of the regression will be inflated. On the other hand, panel regression tends to overestimate the coefficient’s variability for the negative autocorrelation, though negative autocorrelation rarely occurs in the social sciences. The Wooldridge Wald test can be used to test for autocorrelation in panel data models. The panel data with autocorrelation can be resolved by first differencing to control for the autocorrelation effects on the residuals (Wooldridge, 2002).

Homoscedasticity

Another important relevant assumption is homoscedasticity, the assumption that the dependent variable has constant variance across the range of the independent variables. When the variance of the error term changes across observations, the data are heteroscedastic. Heteroscedasticity only affects the efficiency of estimating the regression coefficient while these estimated coefficients remain unbiased (Frees, 2004). In the context of panel data, the Breusch and Pagan (1980) test can be used to detect heteroscedasticity for the fixed effects model, while the random effects model does not
require such an assumption. A robust panel model with corrected (robust) standard errors can be used to handle heteroscedasticity for the fixed effects model (Wooldridge, 2002).

Variables Selection

Dependent Variables

Firm performance is the dependent variable in the model and three different measures of performance (i.e., Proxy Q, Sharpe ratio, and Treynor ratio) were selected to use in this study. Proxy Q measures firm performance on a value-oriented basis and all the stakeholders of the firm care about this value. The Sharpe ratio (S-Ratio) reflects firm performance on a total risk-adjusted standard from the market point of view. The Treynor ratio (T-Ratio) evaluates firm performance on a systematic risk-adjusted measure based on the capital assets pricing model (CAPM). Each of these provides different perspectives of firm performance.

Independent Variables

Liquidity is measured by current ratio in this study. The current ratio conventionally measures liquidity in the accounting and finance literature (Davis & Peles, 1993; Horrigan, 1965; Petes & Schneller, 1989). The current ratio is defined as the relationship of a firm’s current assets over current liabilities. Current assets include cash and other assets that are to be converted to cash within a year, such as marketable securities, and accounts receivable. Current liabilities cover any short-term financial obligations expected to be paid within next 12 months, such as accounts payable, and notes payable.

Solvency is represented by debt ratio. The debt ratio is one of the most frequently used and effective ratios to show the capital structure of a firm (Grossman & Hart, 1986;
Harris & Raviv, 1990; Roenfeldt & Cooley, 1978; Zantout, 1997). Debt ratio equals total debt dividing by total assets and reflects the percentage of firm’s total liabilities in its assets. Total debts include both current liabilities and long-term liabilities. Total assets include current assets, long-term assets, and other assets. A high value of the debt ratio implies that the firm faces greater financial risks and obligations.

The assets turnover ratio is used in this study for activity. The asset turnover ratio uses total sales as a numerator and average total assets as the denominator. It indicates how efficiently a firm’s assets produce revenues and the volume of business generated by the asset base (i.e., the flow of revenue through the asset pipeline). The asset turnover ratio reflects how effectively or the productively the firm’s management is utilizing the total assets, which implies the firm’s capital productivity. The assets turnover ratio is frequently cited as a key activity ratio in financial/accounting research (Flouris & Walker, 2005; Imhoff, Lipe, & Wright, 1997; Roenfeldt & Cooley; 1978).

Sales growth serves as the surrogate for firm’s growth in this study. Many other authors also have used this variable in the literature as sales usually have a positive and meaningful value to work as a base (Keats & Hitt, 1988, Roenfeldt & Cooley, 1978). It is defined as the change in a firm's total sales of this observed year over the preceding year. This measure suggests to the extent how well a firm's products and services are welcomed by the market.

This study uses profit margin as a proxy for profitability. Another popular name for profit margin is return on sales. It measures how profitable a firm’s sales are on a percentage basis after all other expenses and taxes have been deducted. Capon, Farley, and Hoenig (1990) found that return on sales is one of the most widely used profitability
measures after reviewing 320 studies from 1921 to 1987 and employing meta-analysis to summarize the literature on accounting performance to measure profit.

Dividend policy is modeled by a dichotomous variable. If there is no dividend for a firm in a certain year, the value is zero. Otherwise, the value is one.

The size variable, measured by log of total assets, is also included in the model to account for the potential bias due to different firm size. Following what have been done in the previous studies by Hoskisson, Johnson, and Moesel (1994) or Keats and Hitt (1988), logarithmic transformation of total assets can significantly reduce the impact of outliers and make data more normally distributed (Hair et al, 1998; Tabachnick & Fidell, 2001).

Business diversification and geographic diversification, respectively, are also modeled by dichotomous variables. Zero represents no diversification at all and one represents the opposite. According to Statement of Financial Accounting Standards (SFAS) No. 14 (Financial Accounting Standards Board [FASB], 1976), business segment data are reported when an industry is more than 10 percent of a firm’s revenues as part of the disclosure requirements. Thus, whenever there are more than two business segments for the firm, the value of business diversification will be coded as one. Likewise, SFAS No.14 has also required a firm to disclose geographic segment data if the foreign sales take up more than 10 percent of its total revenue.

Sample and Data

This study includes all active publicly traded hospitality firms with available data from both Standard & Poor's COMPUSTAT and Center for Research in Security Prices.
(CRSP) databases between 2000 and 2004. The sample firm names and associated tickers were first collected through the primary North American Industry Classification System (NACIS) codes in COMPUSTAT. In particular, the hotel sector consists of the firms with NACIS code number 721110 (Hotels & Motels) and 721120 (Casino Hotels), whereas the restaurant sector comprises of these under NACIS code number 722110 (Full-service Restaurants) and 722211 (Limited-service Restaurants). COMPUSTAT has all necessary information to construct the firm financial factors and Proxy Q for this study. A collection of financial variables obtained from COMPUSTAT is listed in Table 2. Table 3 elaborates how the variables included in the proposed model are computed using COMPUSTAT data.
Table 2

Variables Obtained from COMPUSTAT between 2000-2004

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATA4</td>
<td>Current Assets (MM$)</td>
</tr>
<tr>
<td>DATA5</td>
<td>Current Liability (MM$)</td>
</tr>
<tr>
<td>DATA6</td>
<td>Total Assets (MM$)</td>
</tr>
<tr>
<td>DATA9</td>
<td>Long-term Debt (MM$)</td>
</tr>
<tr>
<td>DATA12</td>
<td>Net Sales (MM$)</td>
</tr>
<tr>
<td>DATA21</td>
<td>Common Dividend (MM$)</td>
</tr>
<tr>
<td>DATA24</td>
<td>Year-end Stock Close Price ($&amp;C)</td>
</tr>
<tr>
<td>DATA25</td>
<td>Common Shares Outstanding (MM)</td>
</tr>
<tr>
<td>DATA34</td>
<td>Debt in Current Liabilities (MM$)</td>
</tr>
<tr>
<td>DATA60</td>
<td>Total Common Equity (MM$)</td>
</tr>
<tr>
<td>DATA74</td>
<td>Deferred Taxes on Balance Sheet (MM$)</td>
</tr>
<tr>
<td>DATA172</td>
<td>Net Income (MM$)</td>
</tr>
<tr>
<td>STYPE</td>
<td>Segment Type (char)</td>
</tr>
<tr>
<td>SNAME</td>
<td>Segment Name (char)</td>
</tr>
<tr>
<td>SALE</td>
<td>Net Sales (MM$) Per Segment</td>
</tr>
</tbody>
</table>

Note. MM is millions; MM$ is millions of dollars; $&C is dollars and cents; char stands for characters rather than numbers.
Table 3

Computation of the Variables in the Model

<table>
<thead>
<tr>
<th>Construct</th>
<th>Computation with the data from COMPUSTAT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proxy Q</td>
<td>(DATA6 + (DATA24 x DATA25) - (DATA60 + DATA74)) / DATA6</td>
</tr>
<tr>
<td>Liquidity</td>
<td>DATA4 / DATA5</td>
</tr>
<tr>
<td>Solvency</td>
<td>(DATA9 + DATA34) / DATA6</td>
</tr>
<tr>
<td>Activity</td>
<td>2 x DATA12 / (Current (DATA6) + Previous (DATA6))</td>
</tr>
<tr>
<td>Growth</td>
<td>Current (DATA6) / Previous (DATA6) - 1</td>
</tr>
<tr>
<td>Profitability</td>
<td>DATA172 / DATA12</td>
</tr>
<tr>
<td>Dividend</td>
<td>If DATA21 &gt; 0, D = 0; Else, D = 1</td>
</tr>
<tr>
<td>Business Diversification</td>
<td>If (STYPE = BUSSEG and SALE &gt; 0), BD = 1; Else, BD = 0</td>
</tr>
<tr>
<td>Geographic Diversification</td>
<td>If (STYPE = GEOSEG and SALE &gt; 0), GD = 1; Else, GD = 0</td>
</tr>
</tbody>
</table>

Next, the firm tickers identified in the first step were used to extract the data of each firm's stock returns and Betas in the CRSP database. The 1 month Treasury Bill return was treated as a proxy for risk-free return and was also acquired from the CRSP. The data obtained from CRSP (i.e., Beta, 1 month T-bill return, firm monthly return and standard
deviation) were used to compute the Treynor ratio (T-Ratio) and Sharpe ratios (S-Ratio) according to the formulas illustrated in Chapter 2.

This study tested the relationship between performance and firm-wise factors for the most recent 5-year period with publicly available data, namely 2000 to 2004. This time span is worthwhile to investigate as 2000 starts the new millennium. Therefore, a panel (longitudinal) sample of hospitality firms within the time frame of 2000-2004 was used for empirical analysis. There were some missing and erroneous data (such as a blank value for assets) for certain firms in some years. These observations were pre-screened and removed from the dataset by list-wise deletion (i.e., the whole observation is removed if there is any missing value) to perform the analysis.

Summary

A research design with a proposed model between firm-wise financial factors and firm performance was presented with detailed information on statistical analysis techniques and related assumptions, as well as data collection, and variable selections. The results will be shown and discussed in the next chapter.
CHAPTER 4

FINDINGS OF THE STUDY

The first section of this chapter checks the underlying assumptions of statistical analysis. The second section summarizes the descriptive statistics of all variables used in this study, along with bivariate correlation matrixes. The outcomes of relevant data analysis are presented in Section Three, including relevant tests and panel regression analyses for the two hospitality sectors. Hypotheses testing and summary are provided at the end of the chapter. STATA 9.0 is employed to perform all analyses.

Assumptions Checking

Autocorrelation of each panel data model was tested by Wooldridge (2002) Wald test and the results are listed in Table 4. In the restaurant sector, the autocorrelation problem was raised for the Proxy Q from the perspective of unit effects (i.e., firm differences). Likewise, the Proxy Q and S-Ratio in the hotel sector also had such autocorrelation problems under unit effects. Autoregressive models with 1 lag period - AR (1) were used to mitigate these problems.
Table 4

Wooldridge Wald Test for Autocorrelation

<table>
<thead>
<tr>
<th>Sector</th>
<th>DV</th>
<th>Effects</th>
<th>Test Results</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restaurant</td>
<td>Proxy Q</td>
<td>Unit</td>
<td>$F_{(1,52)}=15.405^{**}$</td>
<td>AR(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=0.307$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td>S-Ratio</td>
<td>Unit</td>
<td>$F_{(1,52)}=0.007$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=1.370$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td>T-Ratio</td>
<td>Unit</td>
<td>$F_{(1,52)}=0.412$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=2.541$</td>
<td>No concern</td>
</tr>
<tr>
<td>Hotel</td>
<td>Proxy Q</td>
<td>Unit</td>
<td>$F_{(1,29)}=6.072^{**}$</td>
<td>AR(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=0.962$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td>S-Ratio</td>
<td>Unit</td>
<td>$F_{(1,29)}=4.751^{**}$</td>
<td>AR(1)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=2.653$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td>T-Ratio</td>
<td>Unit</td>
<td>$F_{(1,29)}=1.087$</td>
<td>No concern</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time</td>
<td>$F_{(1,4)}=1.121$</td>
<td>No concern</td>
</tr>
</tbody>
</table>

Note. ** represents the 0.05 significance level.

Residual scatterplots of predicted scores of the dependent variable and errors of prediction of OLS regressions were employed to check the assumptions of normality, linearity, and homoscedasticity for all the equations in both the restaurant and hotel sector as suggested by Tabachnick and Fidell (2001). Six OLS equations were initially run for the three performance measures in both sectors. Additionally, three AR(1) OLS models were performed to control for the potential autocorrelation problems identified previously.
in the Proxy Q in both the restaurant and hotel sector and the Sharpe ratio in the hotel sector (see Table 4). A total of nine graphs (Figures 3-11) are generated for checking the assumptions of normality, linearity and homoscedasticity. There are no serious issues for the assumptions of normality and linearity as all graphs are scattered without curve shapes. However, Figure 3 (Proxy Q for Restaurant Firms) and Figure 6 (Proxy Q for Hotel Firms) raise some concerns over heteroscedasticity because the distributions of the scatterplots are not random according to Tabachnick and Fidell (2001). As mentioned in Chapter 3, using robust standard errors (robust model) can mitigate the heteroscedasticity problem for the fixed effects model. On the other hand, it will not be a problem for the random effects model in this matter as the random effects model does not require such an assumption. In addition, multicollinearity of these models was assessed through variance inflation factor (VIF). The values of VIF range from 1.060-2.634 for restaurant firms and 1.129-1.854 for hotel firms, which implies no problems in this regard.
Figure 3. Residual scatterplot of proxy Q for restaurant firms.

Figure 4. Residual scatterplot of S-Ratio for restaurant firms.
Figure 5. Residual scatterplot of T-Ratio for restaurant firms.

Figure 6. Residual scatterplot of proxy Q for hotel firms.
Figure 7. Residual scatterplot of S-Ratio for hotel firms.

Figure 8. Residual scatterplot of T-Ratio for hotel firms.
Figure 9. Residual scatterplot of proxy $Q$ AR (1) for restaurant firms.

Figure 10. Residual scatterplot of proxy $Q$ AR (1) for hotel firms.

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Descriptive Statistics

The Restaurant Sector

Observations of ninety-two restaurant firms were first obtained by their NAICS codes (i.e., 722110 and 722211) from 2000 through 2004. Firms with erroneous and inadequate data and lack of stock return information were dropped. A total of 256 observations (firm/year) from 56 restaurant firms with no missing values were retained for the data analysis in this study. Descriptive statistics of all continuous variables are summarized in Table 5. Table 6 shows the frequency and percentages of the dichotomous variables.
Table 5

Descriptive Statistics for the Restaurant Sector

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity</td>
<td>256</td>
<td>0.923</td>
<td>0.543</td>
<td>3.597</td>
<td>0.234</td>
</tr>
<tr>
<td>Solvency</td>
<td>256</td>
<td>0.213</td>
<td>0.153</td>
<td>0.711</td>
<td>0.000</td>
</tr>
<tr>
<td>Activity</td>
<td>256</td>
<td>1.690</td>
<td>0.531</td>
<td>3.835</td>
<td>0.663</td>
</tr>
<tr>
<td>Growth</td>
<td>256</td>
<td>0.118</td>
<td>0.150</td>
<td>1.103</td>
<td>-0.259</td>
</tr>
<tr>
<td>Profitability</td>
<td>256</td>
<td>0.032</td>
<td>0.058</td>
<td>0.139</td>
<td>-0.417</td>
</tr>
<tr>
<td>Size</td>
<td>256</td>
<td>19.243</td>
<td>1.723</td>
<td>24.050</td>
<td>15.134</td>
</tr>
<tr>
<td>Proxy Q</td>
<td>256</td>
<td>1.816</td>
<td>1.070</td>
<td>7.573</td>
<td>0.470</td>
</tr>
<tr>
<td>S-Ratio</td>
<td>256</td>
<td>1.990</td>
<td>3.515</td>
<td>11.369</td>
<td>-10.705</td>
</tr>
<tr>
<td>T-Ratio</td>
<td>256</td>
<td>0.535</td>
<td>9.977</td>
<td>8.527</td>
<td>-6.957</td>
</tr>
</tbody>
</table>

Table 6

Frequency and Percentages of the Dichotomous Variables of the Restaurant Sector

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (Observations)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend Payout</td>
<td>60</td>
<td>0.234</td>
</tr>
<tr>
<td>Business Diversification</td>
<td>57</td>
<td>0.223</td>
</tr>
<tr>
<td>Geographical Diversification</td>
<td>36</td>
<td>0.141</td>
</tr>
</tbody>
</table>

Liquidity (current ratio) ranged from 0.234 to 3.597, with a mean of 0.922. On average, restaurant firms had slightly more current liabilities than current assets. With an
average value of solvency (debt ratio) at 0.213, the restaurant sector was considered a lower leveraged business in general. Restaurant firms relied more on equity and less on debt. The minimum activity ratio (total asset turnover) was 0.663 and the maximum was 3.835. The average activity ratio of 1.690 showed that restaurant firms’ generated approximated 70 percent more sales than assets, indicating their reasonable management effectiveness and efficiency. Restaurant firms grew at 11.8 percent annually from 2000 to 2004 in terms of sales, which was fairly strong. Profitability was 3.2 percent yearly. The Proxy Q fell between 0.470 and 7.573 with an average of 1.816. This implies that restaurant firms were approximately worth more than the cost to rebuild them. The mean of the Sharpe ratio and the Treynor ratio was 1.990 and 0.535, respectively. There were relative small percentages of restaurant firms that paid out dividend, implemented significant business diversification and/or geographical diversification.

The Hotel Sector

Fifty-two hotel (including casino hotel) firms were initially identified through their NACIS code numbers (i.e., 721110 and 721120). 151 observations (firm/year) from 32 hotels panel data were retained in this study between 2000 and 2004 after incomplete and inaccurate accounting data and incomplete stock returns information were excluded. The descriptive statistics of all continuous variables are presented in Table 7. Table 8 shows the frequencies and percentages of the dichotomous variables.
Table 7

Descriptive Statistics for the Hotel Sector

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Max</th>
<th>Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidity</td>
<td>151</td>
<td>1.205</td>
<td>0.925</td>
<td>5.995</td>
<td>0.253</td>
</tr>
<tr>
<td>Solvency</td>
<td>151</td>
<td>0.466</td>
<td>0.185</td>
<td>0.950</td>
<td>0.102</td>
</tr>
<tr>
<td>Activity</td>
<td>151</td>
<td>0.591</td>
<td>0.558</td>
<td>4.734</td>
<td>0.087</td>
</tr>
<tr>
<td>Growth</td>
<td>151</td>
<td>0.056</td>
<td>0.252</td>
<td>1.317</td>
<td>-0.783</td>
</tr>
<tr>
<td>Profitability</td>
<td>151</td>
<td>0.003</td>
<td>0.167</td>
<td>0.300</td>
<td>-1.000</td>
</tr>
<tr>
<td>Size</td>
<td>151</td>
<td>20.843</td>
<td>1.608</td>
<td>23.261</td>
<td>17.618</td>
</tr>
<tr>
<td>Proxy Q</td>
<td>151</td>
<td>1.194</td>
<td>0.517</td>
<td>3.670</td>
<td>0.514</td>
</tr>
<tr>
<td>T-Ratio</td>
<td>151</td>
<td>0.282</td>
<td>1.405</td>
<td>5.908</td>
<td>-7.796</td>
</tr>
</tbody>
</table>

Table 8

Frequency and Percentages of the Dichotomous Variables of the Hotel Sector

<table>
<thead>
<tr>
<th>Variable</th>
<th>Frequency (Observations)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dividend Payout</td>
<td>48</td>
<td>0.318</td>
</tr>
<tr>
<td>Business Diversification</td>
<td>77</td>
<td>0.510</td>
</tr>
<tr>
<td>Geographical Diversification</td>
<td>44</td>
<td>0.291</td>
</tr>
</tbody>
</table>

The hotel sector had an average liquidity (current ratio) value of 1.205, with a maximum of 5.995 and a minimum of 0.253. Hotel firms had relative more current assets.
than current liabilities. The hotel sector was slightly more liquid than the restaurant counterpart. The mean value of solvency for hotel firms was 0.466, indicating hotels were approximately equally financed through both equity and debt. The hotel sector was leveraged relatively heavily compared to the restaurant sector. The activity ratio of hotel firms averaged at 0.591 and lagged far behind restaurant firms, reflecting mediocre management effectiveness and efficiency in using available assets to generate adequate revenues. The growth rate of hotel firms was 5.6 percent annually, which was moderate. Hotel firms had an extremely low annualized return of 0.3 percent during the 5-year period as compared with restaurant firms' 3.2 percent annual profitability rate. The Proxy Q ranged from 0.514 to 3.670 with an average of 1.194. Hotels firms were worth slightly more than their rebuilt costs on average. The mean of the Sharpe ratio and Treynor ratio was 2.341 and 0.282, respectively. 31.8 % of hotel firm/year observations had dividend payouts. Half of the hotels had significant business diversifications and approximately 30% of hotel firms had geographical diversifications. Hotels had more dividend payouts, business and geographical diversifications than restaurants from 2000 through 2004.

Correlation Matrix

Table 9 contains the correlation matrix of the variables for the restaurant sector. The correlation coefficients indicated low to moderate pair-wise correlation among these variables. The correlation matrix of the variables for the hotel sector is presented in Table 10. No numbers arouse attention because bivariate correlation coefficients range from -0.338 to 0.532, which indicate low to moderate correlations among these variables.
Table 9

Correlation Matrix of the Variables for the Restaurant Sector

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>S</th>
<th>A</th>
<th>G</th>
<th>P</th>
<th>Size</th>
<th>D</th>
<th>BD</th>
<th>GD</th>
<th>Proxy Q</th>
<th>S-Ratio</th>
<th>T-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>-0.381**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.118**</td>
<td>-0.077</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>0.223**</td>
<td>-0.166**</td>
<td>0.081*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>-0.101*</td>
<td>-0.110**</td>
<td>-0.169**</td>
<td>0.157**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>-0.220**</td>
<td>0.066</td>
<td>-0.392**</td>
<td>-0.035</td>
<td>0.442**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-0.127**</td>
<td>-0.079</td>
<td>-0.247**</td>
<td>-0.065</td>
<td>0.254**</td>
<td>0.505**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>0.034</td>
<td>0.074</td>
<td>0.064</td>
<td>-0.006</td>
<td>-0.031</td>
<td>0.076</td>
<td>0.103**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GD</td>
<td>-0.004</td>
<td>0.122**</td>
<td>0.007</td>
<td>-0.039</td>
<td>0.163**</td>
<td>0.504**</td>
<td>0.174**</td>
<td>0.162**</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proxy Q</td>
<td>0.210**</td>
<td>-0.372**</td>
<td>0.013</td>
<td>0.319**</td>
<td>0.332**</td>
<td>0.329**</td>
<td>0.018</td>
<td>0.171**</td>
<td>0.219**</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-Ratio</td>
<td>0.085*</td>
<td>-0.155**</td>
<td>-0.027</td>
<td>0.091*</td>
<td>0.201**</td>
<td>0.094*</td>
<td>0.061</td>
<td>-0.018</td>
<td>0.023</td>
<td>0.364**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>T-Ratio</td>
<td>0.102*</td>
<td>-0.074</td>
<td>-0.090*</td>
<td>0.040</td>
<td>0.111**</td>
<td>0.022</td>
<td>0.000</td>
<td>0.024</td>
<td>0.023</td>
<td>0.215**</td>
<td>0.510**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note. ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.
### Table 10

**Correlation Matrix of the Variables for the Hotel Sector**

<table>
<thead>
<tr>
<th></th>
<th>L</th>
<th>S</th>
<th>A</th>
<th>G</th>
<th>P</th>
<th>Size</th>
<th>D</th>
<th>BD</th>
<th>GD</th>
<th>Proxy Q</th>
<th>S-Ratio</th>
<th>T-Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>-0.306**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>-0.110*</td>
<td>-0.063</td>
<td>1.000</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>-0.005</td>
<td>0.023</td>
<td>0.198**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.183**</td>
<td>-0.103</td>
<td>0.095</td>
<td>0.219**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td>-0.166**</td>
<td>0.045</td>
<td>-0.206**</td>
<td>0.074</td>
<td>0.014</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>0.152**</td>
<td>-0.141**</td>
<td>-0.090</td>
<td>-0.078</td>
<td>0.149**</td>
<td>0.345**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>0.131*</td>
<td>-0.338**</td>
<td>0.028</td>
<td>-0.109*</td>
<td>-0.215**</td>
<td>-0.039</td>
<td>0.385**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GD</td>
<td>0.100</td>
<td>-0.230**</td>
<td>0.204**</td>
<td>-0.041</td>
<td>0.042</td>
<td>0.099</td>
<td>0.532**</td>
<td>0.512**</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Proxy Q</td>
<td>0.426**</td>
<td>-0.191**</td>
<td>0.088</td>
<td>0.163**</td>
<td>0.371**</td>
<td>0.102</td>
<td>0.345**</td>
<td>-0.079</td>
<td>0.155**</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S-Ratio</td>
<td>0.037</td>
<td>-0.034</td>
<td>-0.068</td>
<td>0.131*</td>
<td>0.185**</td>
<td>0.156**</td>
<td>0.158**</td>
<td>-0.251**</td>
<td>-0.096</td>
<td>0.385**</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>T-Ratio</td>
<td>0.063</td>
<td>-0.036</td>
<td>0.160**</td>
<td>0.160**</td>
<td>0.203**</td>
<td>0.000</td>
<td>-0.032</td>
<td>-0.148**</td>
<td>-0.035</td>
<td>0.171**</td>
<td>0.455**</td>
<td>1.000</td>
</tr>
</tbody>
</table>

*Note.* ** and * represent the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.
Panel Regression Results

Results of the pooled OLS regression, as well as the fixed effects and random effects models for both the restaurant and hotel sectors are presented in this section. Firm performance is measured separately by three performance measures. The panel regression equations are viewed from two perspectives (i.e., unit effects and time effects)

The Restaurant Sector

Proxy Q

Table 11 summarizes the results of the relationships under different perspectives between firm-wise financial factors and firm performance measured by the Proxy Q within the time span from 2000 to 2004 in the restaurant sector. Under the conditions that there were no spatial or temporal differences among all restaurant observations (firm/year), the OLS model showed significant findings. Liquidity, activity ratio, sales growth, profitability demonstrated significant and positive relations with firm performance. In other words, higher percentages of liquidity, activity ratio, sales growth and profitability helped restaurant firms gain better value. Solvency, in converse, had a significantly negative effect on restaurant firm performance. Borrowing more debt may destroy restaurant firm value from 2000 to 2004. The controlling variable size was found to be a significant positive contributor to restaurant performance. Larger restaurants performed better. The negative sign of the dichotomous dividend variable indicated that restaurants without paying dividends outperformed those distributing dividends during this period. On the other hand, restaurants with more business segments had better performance compared to those with only restaurant business. There was no statistically significant difference in restaurant firm performance with respect to the geographical
diversification strategy. Whether the restaurant firm generated significant foreign sales or not had few impacts on its performance. Although the results of the pooled OLS model showed a good model fit with an R-square of 0.451, the underlying assumption that all restaurants in each year were homogeneous could be too stringent. Therefore, further analyses following the steps described in Chapter 3 resumed (see Figure 2).
Table 11

Results of Regression with Proxy Q as the Dependent Variable for the Restaurant Sector

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>RE (AR1)</th>
<th>FE (AR1)</th>
<th>RE (Robust)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Effects</td>
<td>Unit Effects</td>
<td>Time Effects</td>
<td>Time Effects</td>
</tr>
<tr>
<td>L</td>
<td>0.274**</td>
<td>0.178*</td>
<td>0.178</td>
<td>0.274**</td>
</tr>
<tr>
<td></td>
<td>(2.38)</td>
<td>(1.95)</td>
<td>(1.54)</td>
<td>(2.38)</td>
</tr>
<tr>
<td></td>
<td>(-5.92)</td>
<td>(-4.78)</td>
<td>(-3.10)</td>
<td>(-5.92)</td>
</tr>
<tr>
<td>A</td>
<td>0.257**</td>
<td>0.353**</td>
<td>0.606*</td>
<td>0.257**</td>
</tr>
<tr>
<td></td>
<td>(2.22)</td>
<td>(2.30)</td>
<td>(1.69)</td>
<td>(2.22)</td>
</tr>
<tr>
<td>G</td>
<td>1.444**</td>
<td>0.599**</td>
<td>0.317</td>
<td>1.444**</td>
</tr>
<tr>
<td></td>
<td>(4.04)</td>
<td>(2.17)</td>
<td>(0.68)</td>
<td>(4.04)</td>
</tr>
<tr>
<td>P</td>
<td>2.890**</td>
<td>0.544</td>
<td>-0.055</td>
<td>2.890**</td>
</tr>
<tr>
<td></td>
<td>(2.86)</td>
<td>(0.75)</td>
<td>(-0.07)</td>
<td>(2.86)</td>
</tr>
<tr>
<td>Size</td>
<td>0.292**</td>
<td>0.265**</td>
<td>-0.109</td>
<td>0.292**</td>
</tr>
<tr>
<td></td>
<td>(6.13)</td>
<td>(4.02)</td>
<td>(-0.36)</td>
<td>(6.13)</td>
</tr>
<tr>
<td>D</td>
<td>-0.615**</td>
<td>-0.217</td>
<td>0.115</td>
<td>-0.615**</td>
</tr>
<tr>
<td></td>
<td>(-4.34)</td>
<td>(-1.43)</td>
<td>(0.46)</td>
<td>(-4.34)</td>
</tr>
<tr>
<td>BD</td>
<td>0.447**</td>
<td>0.301*</td>
<td>0.447**</td>
<td>0.463**</td>
</tr>
<tr>
<td></td>
<td>(3.58)</td>
<td>(1.65)</td>
<td>(0.46)</td>
<td>(3.58)</td>
</tr>
<tr>
<td>GD</td>
<td>0.055</td>
<td>0.103</td>
<td>-0.320</td>
<td>0.055</td>
</tr>
<tr>
<td></td>
<td>(0.30)</td>
<td>(0.38)</td>
<td>(-0.51)</td>
<td>(0.30)</td>
</tr>
<tr>
<td>Constant</td>
<td>-4.228**</td>
<td>-3.680**</td>
<td>3.372</td>
<td>-4.228**</td>
</tr>
<tr>
<td></td>
<td>(-4.07)</td>
<td>(-2.66)</td>
<td>(0.82)</td>
<td>(-4.07)</td>
</tr>
<tr>
<td>R² (Adj-R²)</td>
<td>0.451 (0.431)</td>
<td>0.402</td>
<td>0.902 (0.854)</td>
<td>0.451</td>
</tr>
</tbody>
</table>

Overall Significance Statistics

F(9,246)=22.48**  Chi²(9)=74.05**  F(9,135)=3.17**  Chi²(9)=202.29**  F(9,242)=22.18**

Hausman Test

Chi²(9)=17.72**  Chi²(9)=3.55

B-P LM Test

Chi²(9)=159.79**  Chi²(9)=0.70

Incremental F Test

F(55,135)=5.51**  F(4,242)=1.91

Note. ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.

The perspective of unit effects (i.e., firm differences) model stated that each restaurant firm had different characteristics, such as personnel, corporate culture,
location, and available resources. Those variables were either omitted or unobservable. The variations in each year were assumed to be invariant. AR (1) models were performed due to the autocorrelation problem identified by the Wooldridge Wald test in Table 4. The significant result of the Hausman specification test and the incremental F test implied that the fixed effects model would be more appropriate than both the random effects and OLS model (see Table 11). The results of the fixed effects model with AR (1) term indicated that two independent variables were significant determinants for restaurant performance. Solvency had an inverse relationship with firm performance. Less debt could evidently enhance restaurant firm value. The positive association between activity ratio and performance reflected that higher management effectiveness and efficiency did increase restaurant firm performance. All other firm-specific financial factors had inconclusive effects on restaurant firm performance in this model. The R-squared value changed to 0.902 after including the firm difference effects.

Taking into consideration of time effects instead of unit effects, the model was reevaluated without autoregressive term due to the insignificant Wooldridge Wald test in Table 4. The time effects model considered that each year had a significant and different dynamic owing to the changes of taste, technology, economy, business cycle and so forth. The differences between firms, however, were considered homogenous. The fixed effects model was run by a robust model using the robust standard error as the assumption of homoscedasticity was violated, which was detected by Figure 3. The result of the Hausman test indicated the random effects model would be more appropriate while the Breusch and Pagan LM test suggested the OLS model would be as efficient as the random effects model. Hence, the results under the perspective of time effects were same

80

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as those of the OLS model. Interpretations of the time effects model were the same with those of the OLS model (see Table 11).

Sharpe Ratio

Table 12 provides the results of the relationships of different models between firm-wise financial factors and restaurant firm performance measured by the Sharpe ratio from 2000 to 2004. The OLS model considered there were no significant differences both across firms and over time. The R-square value was just 0.065. The profitability ratio was the only significant determinant on the Sharpe ratio after reviewing the results in Table 12. All other independent variables failed to produce statistically significant impacts on restaurant firm performance after the total risk was taken into account.
Table 12

Results of Regression with Sharpe Ratio as the Dependent Variable for the Restaurant Sector

<table>
<thead>
<tr>
<th></th>
<th>OLS RE Unit Effects</th>
<th>FE Unit Effects</th>
<th>OLS RE Time Effects</th>
<th>FE Time Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.487 (0.99)</td>
<td>0.345 (0.43)</td>
<td>0.487 (0.99)</td>
<td>0.523 (1.13)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>-2.315 (-1.41)</td>
<td>-11.613** (-2.68)</td>
<td>-2.315 (-1.41)</td>
<td>-1.834 (-1.20)</td>
</tr>
<tr>
<td></td>
<td>(0.36)</td>
<td>(0.36)</td>
<td>(0.36)</td>
<td>(0.39)</td>
</tr>
<tr>
<td>A</td>
<td>0.181 (0.36)</td>
<td>1.147 (0.66)</td>
<td>0.181 (0.36)</td>
<td>0.181 (0.39)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>0.703 (0.46)</td>
<td>0.446 (0.19)</td>
<td>0.703 (0.46)</td>
<td>0.746 (0.52)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>10.476** (2.42)</td>
<td>8.148 (2.42)</td>
<td>10.476** (2.42)</td>
<td>11.262** (2.78)</td>
</tr>
<tr>
<td></td>
<td>(0.65)</td>
<td>(0.65)</td>
<td>(0.65)</td>
<td>(0.47)</td>
</tr>
<tr>
<td>Size</td>
<td>0.133 (0.00)</td>
<td>-0.252 (-0.20)</td>
<td>0.133 (-0.00)</td>
<td>0.091 (0.24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>-0.003 (0.00)</td>
<td>-1.013 (-0.67)</td>
<td>-0.003 (-0.00)</td>
<td>0.134 (0.24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BD</td>
<td>-0.089 (-0.17)</td>
<td>0.995 (0.43)</td>
<td>-0.089 (-0.17)</td>
<td>-0.064 (-0.13)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GD</td>
<td>-0.226 (-0.29)</td>
<td>2.179 (0.61)</td>
<td>-0.226 (-0.29)</td>
<td>-0.175 (-0.24)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.194 (-0.27)</td>
<td>6.462 (0.26)</td>
<td>-1.194 (-0.27)</td>
<td>-0.592 (-0.14)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²(Adj-R²)</td>
<td>0.065 (0.030)</td>
<td>0.065</td>
<td>0.232 (-0.026)</td>
<td>0.065</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Significance Statistics</td>
<td>F(9, 246)=1.89*</td>
<td>Chi²(9)=16.97**</td>
<td>F(9, 191)=1.70*</td>
<td>Chi²(9)=16.97**</td>
</tr>
<tr>
<td>Hausman Test</td>
<td>Chi²(6)=6.96</td>
<td></td>
<td>Chi²(6)=0.85</td>
<td></td>
</tr>
<tr>
<td>B-P LM Test</td>
<td>Chi²(1)=4.81**</td>
<td></td>
<td>chi²(1)=126.01**</td>
<td></td>
</tr>
<tr>
<td>Incremental F Test</td>
<td>F(55,191)=0.76</td>
<td></td>
<td>F(4,242)=10.82**</td>
<td></td>
</tr>
</tbody>
</table>

Note. ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.
The Hausman test implied the random effects models were more appropriate from the perspective of either unit effects or time effects. The Breusch and Pagan LM tests suggested the random effects models were better than the OLS model under both effects as well. In fact, the OLS model and these two random effects models under either unit or time effects had the same coefficient values and the significance levels. Such facts may suggest that the unit effects and time effects for the restaurant sector, if any, are minimal and can be omitted when the firm performance was measured by the Sharpe ratio. Hence, the results had same explanations as those of the OLS model for restaurant firms (see Table 12).

Treynor Ratio

Surprisingly enough, results of the relationships between firm-wise financial factors and firm performance measured by the Treynor ratio were overall insignificant for all appropriate models (see Table 13). It should be noted that some individual factors had significant impacts on firm performance. However, their effects should not be considered as the whole models were statistically insignificant. The possible reasons could be many, such as the impacts of unsystematic risk in each firm, the validity of CAPM model, the reliability and accuracy of measuring beta, and the model fit. These problems may require further investigations.
Table 13

Results of Regression with Treynor Ratio as the Dependent Variable for the Restaurant Sector

<table>
<thead>
<tr>
<th></th>
<th>OLS Unit Effects</th>
<th>RE Unit Effects</th>
<th>FE Unit Effects</th>
<th>RE Time Effects</th>
<th>FE Time Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.216 (0.83)</td>
<td>0.236 (0.88)</td>
<td>0.634 (1.60)</td>
<td>0.216 (0.83)</td>
<td>0.267 (1.04)</td>
</tr>
<tr>
<td>S</td>
<td>-0.582 (-0.67)</td>
<td>-0.598 (-0.65)</td>
<td>-0.263 (-0.12)</td>
<td>-0.582 (-0.67)</td>
<td>-0.491 (-0.58)</td>
</tr>
<tr>
<td>A</td>
<td>-0.347 (-1.32)</td>
<td>-0.306 (-1.09)</td>
<td>0.974 (1.14)</td>
<td>-0.347 (-1.32)</td>
<td>-0.367 (-1.41)</td>
</tr>
<tr>
<td>G</td>
<td>0.045 (0.06)</td>
<td>-0.039 (-0.05)</td>
<td>-1.004 (-0.85)</td>
<td>0.045 (-0.06)</td>
<td>-0.183 (-0.23)</td>
</tr>
<tr>
<td>P</td>
<td>3.935* (1.72)</td>
<td>4.003* (1.72)</td>
<td>3.791 (1.18)</td>
<td>3.935* (1.72)</td>
<td>3.647 (1.61)</td>
</tr>
<tr>
<td>Size</td>
<td>-0.067 (-0.62)</td>
<td>-0.069 (-0.60)</td>
<td>-1.224 (-2.00)</td>
<td>-0.067 (-0.62)</td>
<td>-0.059 (-0.55)</td>
</tr>
<tr>
<td>D</td>
<td>-0.132 (-0.41)</td>
<td>-0.122 (-0.36)</td>
<td>0.135 (0.18)</td>
<td>-0.132 (-0.41)</td>
<td>-0.163 (-0.52)</td>
</tr>
<tr>
<td>BD</td>
<td>0.161 (0.57)</td>
<td>0.170 (0.56)</td>
<td>2.835* (2.48)</td>
<td>0.161 (0.57)</td>
<td>0.183 (0.66)</td>
</tr>
<tr>
<td>GD</td>
<td>0.216 (0.52)</td>
<td>0.210 (0.47)</td>
<td>0.472 (0.27)</td>
<td>0.216 (0.52)</td>
<td>0.225 (0.55)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.175 (0.92)</td>
<td>2.125 (0.85)</td>
<td>21.193* (1.72)</td>
<td>2.175 (0.92)</td>
<td>2.017 (0.86)</td>
</tr>
<tr>
<td>R² (Adj-R²)</td>
<td>0.034 (-0.002)</td>
<td>0.034 (0.077)</td>
<td>0.309 (0.077)</td>
<td>0.034 (0.005)</td>
<td>0.084 (0.035)</td>
</tr>
</tbody>
</table>

Overall Significance Statistics
- F(9,246)=0.95
- Chi²(9)=7.58
- F(9,191)=1.78*
- Chi²(9)=8.57
- F(9,242)=1.01

Hausman Test
- Chi²(6)=8.17
- Chi²(6)=93.41**

B-P LM Test
- Chi²(0)=0.44
- Chi²(0)=7.19**

Incremental F Test
- F(55,191)=1.38
- F(4,242)=3.31**

Note. ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.
The Hotel Sector

Proxy Q

The outcomes of the relationships of different models between firm-wise financial factors and firm performance measured by the Proxy Q from 2000 to 2004 in the hotel sector are shown in Table 14. The OLS model assumed that firm and time differences among all hotel observations (firm/year) were the same. The R-squared value of the OLS model was 0.410. Liquidity, activity ratio, and profitability presented significant and positive relations with firm performance. Put it in another way, higher percentages of liquidity, activity ratio and profitability could contribute to better hotel firm performance. Dividend variable had a significant and positive coefficient, suggesting that it was better for hotels to distribute their dividend to enhance firm value. In contrast to the findings in the restaurant sector, business diversification would significantly give rise to weak hotel performance. All other firm-specific financial factors, such as solvency, sales growth and so on did not generate significant results. It is necessary to continue further analyses with unit effects and time effects models to go beyond the OLS model assumptions.
### Table 14

**Results of Regression with Proxy Q as the Dependent Variable for the Hotel Sector**

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>RE(AR1)</th>
<th>FE(AR1)</th>
<th>RE</th>
<th>FE (Robust)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unit Effects</td>
<td>Unit Effects</td>
<td>Unit Effects</td>
<td>Time Effects</td>
<td>Time Effects</td>
</tr>
<tr>
<td>L</td>
<td>0.210**</td>
<td>0.092**</td>
<td>0.020</td>
<td>0.210**</td>
<td>0.202**</td>
</tr>
<tr>
<td></td>
<td>(5.20)</td>
<td>(2.06)</td>
<td>(0.36)</td>
<td>(5.20)</td>
<td>(5.15)</td>
</tr>
<tr>
<td>S</td>
<td>-0.261</td>
<td>-0.479*</td>
<td>-1.396**</td>
<td>-0.261</td>
<td>-0.176</td>
</tr>
<tr>
<td></td>
<td>(-1.28)</td>
<td>(-1.72)</td>
<td>(-2.24)</td>
<td>(-1.28)</td>
<td>(-0.88)</td>
</tr>
<tr>
<td>A</td>
<td>0.128*</td>
<td>0.051</td>
<td>-0.105</td>
<td>0.128*</td>
<td>.125*</td>
</tr>
<tr>
<td></td>
<td>(1.91)</td>
<td>(0.64)</td>
<td>(-0.78)</td>
<td>(1.91)</td>
<td>(1.91)</td>
</tr>
<tr>
<td>G</td>
<td>0.212</td>
<td>0.162</td>
<td>0.234*</td>
<td>0.212</td>
<td>0.217</td>
</tr>
<tr>
<td></td>
<td>(1.50)</td>
<td>(1.45)</td>
<td>(1.76)</td>
<td>(1.50)</td>
<td>(1.52)</td>
</tr>
<tr>
<td>P</td>
<td>0.460**</td>
<td>0.173</td>
<td>-0.130</td>
<td>0.460**</td>
<td>0.510**</td>
</tr>
<tr>
<td></td>
<td>(2.03)</td>
<td>(0.84)</td>
<td>(-0.57)</td>
<td>(2.03)</td>
<td>(2.30)</td>
</tr>
<tr>
<td>Size</td>
<td>0.018</td>
<td>0.010</td>
<td>0.862**</td>
<td>0.018</td>
<td>0.020</td>
</tr>
<tr>
<td></td>
<td>(0.75)</td>
<td>(0.28)</td>
<td>(3.30)</td>
<td>(0.75)</td>
<td>(0.86)</td>
</tr>
<tr>
<td>D</td>
<td>0.386**</td>
<td>0.305**</td>
<td>0.041</td>
<td>0.386**</td>
<td>0.330**</td>
</tr>
<tr>
<td></td>
<td>(3.96)</td>
<td>(2.85)</td>
<td>(0.31)</td>
<td>(3.96)</td>
<td>(3.42)</td>
</tr>
<tr>
<td>BD</td>
<td>-0.264**</td>
<td>-0.236**</td>
<td>-0.216</td>
<td>-0.264**</td>
<td>-0.219**</td>
</tr>
<tr>
<td></td>
<td>(-2.99)</td>
<td>(-1.98)</td>
<td>(-0.93)</td>
<td>(-2.99)</td>
<td>(-2.53)</td>
</tr>
<tr>
<td>GD</td>
<td>0.006</td>
<td>0.059</td>
<td>-0.720</td>
<td>0.006</td>
<td>0.012</td>
</tr>
<tr>
<td></td>
<td>(0.06)</td>
<td>(0.40)</td>
<td>(-1.22)</td>
<td>(0.06)</td>
<td>(0.13)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.607</td>
<td>1.067</td>
<td>-15.919**</td>
<td>0.607</td>
<td>0.529</td>
</tr>
<tr>
<td></td>
<td>(1.12)</td>
<td>(1.30)</td>
<td>(-4.88)</td>
<td>(1.12)</td>
<td>(1.01)</td>
</tr>
<tr>
<td>R²(Adj-R²)</td>
<td>0.410 (0.372)</td>
<td>0.373</td>
<td>0.773 (0.656)</td>
<td>0.410</td>
<td>0.461 (0.410)</td>
</tr>
</tbody>
</table>

**Overall Significance Statistics**

<table>
<thead>
<tr>
<th></th>
<th>F(9,141)=10.87**</th>
<th>Chi²(60)=31.90**</th>
<th>F(9,70)=2.62**</th>
<th>Chi²(5)=97.86**</th>
<th>F(9,137)=9.84**</th>
</tr>
</thead>
</table>

**Hausman Test**

<table>
<thead>
<tr>
<th></th>
<th>Chi²(6)=57.95**</th>
<th></th>
<th>Chi²(6)=4.36</th>
</tr>
</thead>
</table>

**B-P LM Test**

<table>
<thead>
<tr>
<th></th>
<th>Chi²(1)=25.94**</th>
<th></th>
<th>Chi²(1)=6.31**</th>
</tr>
</thead>
</table>

**Incremental F Test**

<table>
<thead>
<tr>
<th></th>
<th>F(0,179)=2.29**</th>
<th></th>
<th>F(4,137)=3.27**</th>
</tr>
</thead>
</table>

**Note.** ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.

Under the perspective of unit effects that there were differences in each firm and no difference over time, the model was rerun. The fixed effects model was favored over the
random effects model according to the significant Hausman test. The significant incremental F test suggested the fixed effects model was better than the OLS model. The results of the fixed effects model after controlling for the autocorrelation effect-AR (1)-suggested two independent variables (solvency and sales growth) and the control variable size had significant impacts on hotel performance. Solvency produced negative effects on firm performance. Borrowing more debt took its toll on hotel firm value. The significantly positive association between sales growth and performance showed that sales growth in the hotel could improve its firm value. Larger hotel firms in terms of total assets performed better than their smaller counterparts. The remaining firm-specific financial factors were found to have non-significant effects on hotel firm performance in this model. The value of R-squared increased to 0.773 when the effects of firm differences were incorporated.

Both the fixed effects model and random effects models with the perspective of time effects were performed. The robust standard error was used in the fixed effects model as the problem of heteroscedasticity was found in Figure 6. The insignificant Hausman test under time effects indicated the random effects model was favored over the fixed effect model while the significant Breusch and Pagan LM tests confirmed the random effects model was better for the hotel sector as compared with the OLS model. The results of the random effects model under time effects were the same as those of the OLS model (see Table 14), so were the interpretations of the results.

Sharpe Ratio

Table 15 contains results of the relationships of various models between firm-wise financial factors and firm performance measured by the Sharpe ratio from 2000 to 2004.
in the hotel sector. With the assumption of homogeneity both across firms and over time, the results of the OLS model showed that only dividend policy and business diversification variables made significant differences on the total risk-adjusted hotel firm performance. The R-squared value was 0.180. In particular, hotels which paid out dividends over the 5-year period were perceived to be better than hotels which did not pay dividends. Alternatively, more business diversifications were considered as a bad strategy on hotel firm performance when the total risk was adjusted. The rest of firm-wise financial factors were statistically insignificant to hotel firm performance after controlling the total risk.
### Table 15

**Results of Regression with Sharpe Ratio as the Dependent Variable for the Hotel Sector**

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>RE(AR1) Unit Effects</th>
<th>FE(AR1) Unit Effects</th>
<th>RE Time Effects</th>
<th>FE Time Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.003</td>
<td>0.190</td>
<td>0.503</td>
<td>0.003</td>
<td>-0.081</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.43)</td>
<td>(0.64)</td>
<td>(0.01)</td>
<td>(-0.25)</td>
</tr>
<tr>
<td>S</td>
<td>-3.014</td>
<td>-2.910</td>
<td>-8.888</td>
<td>-3.014</td>
<td>-1.076</td>
</tr>
<tr>
<td></td>
<td>(-1.54)</td>
<td>(-1.22)</td>
<td>(-1.05)</td>
<td>(-1.54)</td>
<td>(-0.66)</td>
</tr>
<tr>
<td>A</td>
<td>-0.241</td>
<td>-0.159</td>
<td>-0.417</td>
<td>-0.241</td>
<td>-0.311</td>
</tr>
<tr>
<td></td>
<td>(-0.38)</td>
<td>(-0.22)</td>
<td>(-0.21)</td>
<td>(-0.38)</td>
<td>(-0.59)</td>
</tr>
<tr>
<td>G</td>
<td>1.902</td>
<td>1.844</td>
<td>4.637**</td>
<td>1.902</td>
<td>1.957**</td>
</tr>
<tr>
<td></td>
<td>(1.41)</td>
<td>(1.39)</td>
<td>(2.36)</td>
<td>(1.41)</td>
<td>(1.68)</td>
</tr>
<tr>
<td>P</td>
<td>0.850</td>
<td>2.251</td>
<td>3.051</td>
<td>0.850</td>
<td>1.614</td>
</tr>
<tr>
<td></td>
<td>(0.39)</td>
<td>(0.98)</td>
<td>(0.92)</td>
<td>(0.39)</td>
<td>(0.89)</td>
</tr>
<tr>
<td>Size</td>
<td>0.091</td>
<td>0.164</td>
<td>5.436</td>
<td>0.091</td>
<td>0.131</td>
</tr>
<tr>
<td></td>
<td>(0.40)</td>
<td>(0.56)</td>
<td>(1.56)</td>
<td>(0.40)</td>
<td>(0.69)</td>
</tr>
<tr>
<td>D</td>
<td>2.884**</td>
<td>2.656**</td>
<td>0.899</td>
<td>2.884**</td>
<td>1.881**</td>
</tr>
<tr>
<td></td>
<td>(3.09)</td>
<td>(2.48)</td>
<td>(0.48)</td>
<td>(3.09)</td>
<td>(2.39)</td>
</tr>
<tr>
<td>BD</td>
<td>-2.817**</td>
<td>-2.826**</td>
<td>-3.147</td>
<td>-2.817**</td>
<td>-1.932**</td>
</tr>
<tr>
<td></td>
<td>(-3.33)</td>
<td>(-2.76)</td>
<td>(-0.98)</td>
<td>(-3.33)</td>
<td>(-2.74)</td>
</tr>
<tr>
<td>GD</td>
<td>-1.100</td>
<td>-0.970</td>
<td>4.130</td>
<td>-1.100</td>
<td>-1.050</td>
</tr>
<tr>
<td></td>
<td>(-1.16)</td>
<td>(-0.82)</td>
<td>(0.86)</td>
<td>(-1.16)</td>
<td>(-1.34)</td>
</tr>
<tr>
<td>Constant</td>
<td>2.707</td>
<td>0.982</td>
<td>-105.097**</td>
<td>2.707</td>
<td>0.976</td>
</tr>
<tr>
<td></td>
<td>(0.52)</td>
<td>(0.15)</td>
<td>(-2.04)</td>
<td>(0.52)</td>
<td>(0.23)</td>
</tr>
<tr>
<td>R²(Adj-R²)</td>
<td>0.180 (0.127)</td>
<td>0.175</td>
<td>0.369 (0.046)</td>
<td>0.180</td>
<td>0.460 (0.409)</td>
</tr>
</tbody>
</table>

**Overall Significance Statistics**

- **F:**\(F_{(9, 141)}=3.43**
- **Chi²:**\(\text{Chi}^2_{(10)}=25.38**
- **F:**\(F_{(9, 79)}=2.15**
- **Chi²:**\(\text{Chi}^2_{(9)}=30.90**
- **F:**\(F_{(9, 137)}=3.22**

**Hausman Test**

- **Chi²:**\(\text{Chi}^2_{(6)}=12.76**

**B-P LM Test**

- **Chi²:**\(\text{Chi}^2_{(6)}=6.18**

**Incremental F Test**

- **F:**\(F_{(1, 79)}=0.42\)
- **F:**\(F_{(4, 137)}=17.81**

*Note.** ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.

The significant Hausman test implied the fixed effects model was more appropriate than the random effects model from the perspective of unit effects (see Table 15). The
significant incremental F test showed the fixed effects model was better than the OLS model. The results of the fixed effects model with AR (1) suggested only sales growth would make significant positive impacts on total risk-adjusted hotel firm performance with an R-squared of 0.369. Hotels with positive sales growth exhibited healthy firm performance on a total risk-adjusted basis.

The result of the Hausman test under time effects indicated the random effects model was preferred (see Table 15). Although the significant Breusch and Pagan LM test implied that the random effects model was favored over the OLS, the random effects model had the same results as the OLS model. Thus, same interpretations with the OLS model followed for hotel firms when the total risk was considered.

**Treynor Ratio**

Similar to the results in the restaurant sector, none of the appropriate models had an overall significant test statistic as shown in Table 16. Therefore, no further discussions would follow.
Table 16

Results of Regression with Treynor Ratio as the Dependent Variable for the Hotel Sector

<table>
<thead>
<tr>
<th></th>
<th>OLS</th>
<th>RE Unit Effects</th>
<th>FE Unit Effects</th>
<th>RE Time Effects</th>
<th>FE Time Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>0.103</td>
<td>0.103</td>
<td>0.145</td>
<td>0.103</td>
<td>0.111</td>
</tr>
<tr>
<td></td>
<td>(0.76)</td>
<td>(0.76)</td>
<td>(0.59)</td>
<td>(0.76)</td>
<td>(0.83)</td>
</tr>
<tr>
<td>S</td>
<td>-0.336</td>
<td>-0.336</td>
<td>-2.137</td>
<td>-0.336</td>
<td>0.035</td>
</tr>
<tr>
<td></td>
<td>(-0.49)</td>
<td>(-0.49)</td>
<td>(-1.10)</td>
<td>(-0.49)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>A</td>
<td>0.379*</td>
<td>0.379*</td>
<td>0.768</td>
<td>0.379*</td>
<td>0.387*</td>
</tr>
<tr>
<td></td>
<td>(1.67)</td>
<td>(1.67)</td>
<td>(1.43)</td>
<td>(1.67)</td>
<td>(1.76)</td>
</tr>
<tr>
<td>G</td>
<td>0.485</td>
<td>0.485</td>
<td>0.535</td>
<td>0.485</td>
<td>0.541</td>
</tr>
<tr>
<td></td>
<td>(1.02)</td>
<td>(1.02)</td>
<td>(0.99)</td>
<td>(1.02)</td>
<td>(1.12)</td>
</tr>
<tr>
<td>P</td>
<td>1.059</td>
<td>1.059</td>
<td>1.891*</td>
<td>1.059</td>
<td>1.189</td>
</tr>
<tr>
<td></td>
<td>(1.39)</td>
<td>(1.39)</td>
<td>(1.77)</td>
<td>(1.39)</td>
<td>(1.58)</td>
</tr>
<tr>
<td>Size</td>
<td>0.029</td>
<td>0.029</td>
<td>-0.127</td>
<td>0.029</td>
<td>0.038</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.35)</td>
<td>(-0.15)</td>
<td>(0.35)</td>
<td>(0.48)</td>
</tr>
<tr>
<td>D</td>
<td>0.007</td>
<td>0.007</td>
<td>-0.052</td>
<td>0.007</td>
<td>-0.143</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(-0.09)</td>
<td>(0.02)</td>
<td>(-0.44)</td>
</tr>
<tr>
<td>BD</td>
<td>-0.354</td>
<td>-0.354</td>
<td>-0.049</td>
<td>-0.354</td>
<td>-0.216</td>
</tr>
<tr>
<td></td>
<td>(-1.19)</td>
<td>(-1.19)</td>
<td>(-0.06)</td>
<td>(-1.19)</td>
<td>(-0.74)</td>
</tr>
<tr>
<td>GD</td>
<td>-0.073</td>
<td>-0.073</td>
<td>0.639</td>
<td>-0.073</td>
<td>-0.082</td>
</tr>
<tr>
<td></td>
<td>(-0.22)</td>
<td>(-0.22)</td>
<td>(0.38)</td>
<td>(-0.22)</td>
<td>(-0.25)</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.342</td>
<td>-0.342</td>
<td>3.307</td>
<td>-0.342</td>
<td>-0.735</td>
</tr>
<tr>
<td></td>
<td>(-0.19)</td>
<td>(-0.19)</td>
<td>(0.19)</td>
<td>(-0.19)</td>
<td>(-0.41)</td>
</tr>
<tr>
<td>R²(Adj-R²)</td>
<td>0.089 (0.031)</td>
<td>0.089</td>
<td>0.233 (-0.036)</td>
<td>0.089</td>
<td>0.167 (0.088)</td>
</tr>
</tbody>
</table>

Overall Significance Statistics

<table>
<thead>
<tr>
<th></th>
<th>F(9,141)=1.53</th>
<th>Chi²(9)=13.75</th>
<th>F(9,111)=1.67</th>
<th>Chi²(9)=13.75</th>
<th>F(9,137)=1.58</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hausman Test</td>
<td>Chi²(6)=5.31</td>
<td>Chi²(6)=4.55</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B-P LM Test</td>
<td>Chi²(0)=2.81</td>
<td>Chi²(0)=5.57**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incremental F Test</td>
<td>F(31,111)=0.67</td>
<td>F(4,137)=3.20**</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. ** and * represents the 0.05 and 0.10 significance levels, respectively. L: liquidity, S: solvency, A: activity, G: growth, P: profitability, Size: log of total assets, D: dividend payout, BD: business diversification, GD: geographical diversification.
Regression Results Summary

In the restaurant sector, solvency and activity ratio were the only significant factors to the value-based firm performance when only firm differences were considered. When only time effects model was taken into account, liquidity, sales growth, profitability, size, dividend payout, and business diversification constructs were all significant determinants of the Proxy Q besides previously identified solvency and activity factors. Alternatively, profitability appeared to be the only significant contributor to the Sharpe ratio of restaurant firms in all different models. For the hotel sector, solvency, sales growth and size significantly affected hotel firm performance measured by the Proxy Q when only differences among firms (i.e., unit effects) were considered. From time effects' perspective, liquidity, activity ratio, profitability and business diversification played important roles in influencing the Proxy Q. On the other hand, only sales growth had a significant impact on hotel firm's Sharpe ratio when merely firm heterogeneity was considered. Dividend and business diversification had significantly differentiated hotel firm's total risk-adjusted performance in the time effects model. No significant results were yielded for systematic risk-based firm performance measured by the Treynor ratio in both the hotel and restaurant sectors. It should be pointed out that all the random effects models under the perspective of time effects have the exact same results as the OLS models. With only a 5-year period, the effects of time dynamics were confirmed to be minimal. The empirical results verify the reason why most literature in panel data regression has only taken into account of unit effects models.
Hypotheses Testing

This section presents the results of the six hypotheses constructed in Chapter 3.

Hypothesis I posits that the examined firm-wise financial factors will have impacts on firm performance in terms of value-based return in the restaurant sector. This hypothesis is statistically supported at the 0.05 significance level that at least one financial factor significantly affects firm performance, which is measured by the Proxy Q.

Hypothesis II posits that the examined firm-wise financial factors will have impacts on firm performance in terms of total risk-adjusted return in the restaurant sector. This hypothesis is statistically supported at the 0.05 significance level that at least one financial factor significantly affects firm performance as the Sharpe ratio surrogates firm performance.

Hypothesis III posits that the examined firm-wise financial factors will have impacts on firm performance in terms of systematic risk-adjusted return in the restaurant sector. This hypothesis is not supported when firm performance is evaluated by the Treynor ratio.

Hypothesis IV postulates that the examined firm-wise financial factors will have impacts on firm performance in terms of value-based return in the hotel sector. This hypothesis is statistically supported at the 0.05 significance level that at least one financial factor significantly affects firm performance, which is measured by the Proxy Q.

Hypothesis V postulates that the examined firm-wise financial factors will have impacts on firm performance in terms of total risk-adjusted return in the hotel sector. This hypothesis is statistically supported at the 0.05 significance level that at least one
financial factor significantly affects firm performance as the Sharpe ratio surrogates firm performance.

Hypothesis VI postulates the examined firm-wise financial factors will have impacts on firm performance in terms of systematic risk-adjusted return in the hotel sector. This hypothesis is not supported when firm performance is evaluated by the Treynor ratio.

Summary

Panel regression analysis and results were presented in this chapter. The underlying assumptions were checked first. Summaries of descriptive statistics and correlation tables were then reported. Following the test procedures, relevant data analysis were presented and discussed for both the restaurant and hotel sectors by three performance measures. Conclusions, summary and future research will be presented in Chapter 5.
CHAPTER 5

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

Introduction

The goal of financial management of any company is to establish the best possible financial policy (i.e., financing, investing and dividend decisions) to improve firm performance, the lifeblood of a company. There has been a proliferation of studies over the years in the realm of corporate finance to develop numerous theories in an effort to understand the relationships between firm-wise financial factors and firm performance. The reasons for this study to select firm-wise financial factors are several. First, financial factors, unlike corporate culture, location, and competition, are direct, objective and measurable. Second, firm-wise financial factors are those that can be controlled and influenced by hospitality manager’s decisions. Non-firm specific financial factors, such as the general economic conditions, the market trends, which are usually beyond the firm’s control, are not considered in this study. Third, previous studies did find individual financial factors’ impacts on firm performance, but not in a comprehensive way. This study is intended to investigate these factors in an integrated mode. Fourth, through the extensive review of the related literature, most firm-wise financial factors, such as liquidity, solvency, and growth, hold so-called optimal structures both theoretically and empirically (Moyer, McGuigan, & Kretlow, 2001). This optimal point is associated with best firm performance; any where below or above this point will undermine firm
performance. A positive relationship holds between the specific financial factor and firm performance before the optimal point is reached. A negative relationship prevails after the target point is passed. Thus, it is the responsibility of the hospitality management team to craft the mix and percentages of many firm-specific financial factors to optimize firm performance. The inconclusive patterns of results exhibited by prior research on firm-wise financial factors and firm performance calls for an empirical investigation in the hospitality industry.

The objective of the study is to investigate the relationship between firm-wise financial factors and firm performance in the hospitality industry (i.e., the hotel and restaurant sector). A handful of potential firm-wise financial factors have appeared in the financial literature, which set up a foundation for the linear model tested in this study. In-depth interpretations and insightful implications of the findings will be also provided in this study. With a methodologically sound design, findings of this study from the analyses of these financial factors may shed light on how to improve firm performance for the hospitality managers. Additionally, the knowledge generated from this study will contribute to the body of the hospitality financial management knowledge.

This chapter first presents the summary of the study. Implications of the findings of study for the hospitality industry are discussed next in the hospitality industry. Lastly, this chapter provides some recommendations for future research.

Summary of the Study

The purpose of this study is to examine the impacts of firm-wise financial factors on firm performance in the restaurant and hotel sectors. Linear regression models with panel
data were proposed with a consideration of both research questions and a review of related literature. Both the hotel and restaurant sectors were assessed by three different types of firm performance measure (Tobin's Q, Sharpe ratio, and Treynor ratio) as each represented firm performance from different angles. Six hypotheses were constructed in this study accordingly. Nine different firm-wise financial factors (liquidity, solvency, activity, growth, profitability, size, dividend policy, business diversification, and geographical diversification) were the independent variables in the regression.

Relevant hospitality firm data were derived from COMPUSTAT and CRSP according to their individual NACIS codes. The period of 2000-2004 was the time frame for this study given the availability of relevant firm data since the start of the new millennium. The sample of the restaurant sector and hotel sector have 256 and 151 firm/year observations, respectively, involving 56 restaurant firms and 32 hotel firms. With the data being both cross-sectional and time-series data in nature, panel regression technique was used for estimating models. The Hausman specification test, the incremental F test and the Breusch and Pagan LM test were used to identify the most appropriate model among the constant coefficient model (i.e., the pooled OLS model), the fixed effects model, and the random effects model. The results were obtained after several assumptions were checked.

The restaurant sector was relatively less liquid but highly solvent, with a moderate growth rate and profitability. Not many restaurant firms paid out dividends, nor did they have business and geographical diversifications. On the other hand, the hotel sector was relatively liquid but less solvent, with a lower growth rate and very poor profitability.
Only about one third of the hotels (firm/year) paid out dividends. Many diversification activities, either business or geographical, occurred for hotel firms through 2000 to 2004. Solvency, activity ratio, liquidity, sales growth, profitability, size, dividend payout and business diversification may influence restaurants’ firm performance in terms of the Proxy Q whereas profitability was the only significant factor of restaurant firm performance measured by the Sharpe ratio. For the hotel companies, solvency, sales growth, size, liquidity, activity ratio, profitability and business diversification had significant impacts on the Proxy Q. However, only sales growth appeared to be highly related with the Sharpe ratio in hotels. No statistically significance was found between firm-wise financial factors and the systematic risk-adjusted firm performance (i.e., the Treynor ratio) for either the hotel or restaurant sector.

Implications of the Findings

Implications of the results are discussed next from two different perspectives (unit effects and time effects) for both the restaurant and hotel sectors.

The Restaurant Sector

Proxy Q

From a unit effects’ perspective, solvency and activity ratio were found to be significant determinants of firm performance as measured by the Proxy Q during 2000-2004 (See Table 11). Activity ratio had a positive and significant effect on firm performance, which was supportive of both the theoretical foundation (Moyer et al., 2001) and the empirical evidence (Roenfeldt & Cooley, 1978). Solvency was shown to be negatively related with restaurant firm performance. The negative sign of solvency
indicated that costs of using debt in restaurant firms outweighed benefits of using debt, which supported the findings reported by John (1993) and Capon, Farley, and Hoenig (1990)'s studies. Debt structure of the restaurant sector was beyond the optimal level. Therefore, restaurants with relatively higher value of asset utilization and lower value of debt usage were more likely to achieve better firm performance compared to those with relatively lower asset turnover and higher debt percentages. Higher activity ratio indicates firm's better efficiency and effectiveness, which exhibited positive relationship on restaurant firm performance. Using less debt was favored to yield better firm performance for restaurants.

In consideration of only time effects among firms, liquidity, sales growth, profitability, dividend payout, size, and business diversification significantly contributed to restaurant firm performance in addition to solvency and activity ratio during 2000 to 2004 (see Table 11). Liquidity, activity, sales growth, profitability, size, business diversification variables had positive impacts on restaurant firm performance over these 5 years. The empirical evidence was in line with the findings of many previous studies (Baskin, 1987; Capon et al., 1990; Hoskisson, Johnson, & Moesel, 1994; Jacobson, 1987; Keating, 1997; Keats & Hitt, 1988; Myers, 1977; Roenfeldt & Cooley, 1978; Villalonga, 2004). During these 5 years, the shortage costs of liquidity assets on average exceeded the holding costs of liquid assets in the restaurant sector. Restaurants were suggested to retain relative more liquid assets in order to prevent from the potential bankruptcy. Effectiveness and efficiency could help restaurants gain better performance. Larger restaurants with more assets, rapid sales growth rates and more business diversifications achieved good firm performance. Solvency and dividend payout, on the other hand,
affected firm performance negatively. Relatively higher debt ratio and the act of paying dividend resulted in lower restaurant performance in a significant way. The financial costs and agency costs associated with more debt were greater than the tax benefits of the debt. Meanwhile, paying out dividend signaled the firm did not have confidence in and good expectations of its own projects. Therefore, a restaurant which wanted to improve its firm performance over time may consider increasing the values of financial factors which had positive relationships with firm performance and/or decreasing the values of the factors which were negatively related with firm performance.

Geographical diversification did not appear to have any significant influence on restaurant firm performance measured by the Proxy Q in any models from 2000-2004. The potential reason might be the scarcity of restaurant firms’ significant foreign presence, which could lead to an insignificant effect on firm performance.

Sharpe Ratio

Profitability showed to be significantly associated with restaurant firm performance as measured by the Sharpe ratio in all different models from 2000-2004. The higher profitability was, the better performance was. The rest of firm-wise financial factors did not have direct impacts on the Sharpe ratio in the restaurant sector. There were at least two potential reasons. Market usually consists of a large group of heterogeneous investors who may hold various opinions about the firm’s financial structures. Different financial structures are associated with different levels of risks. For instance, low debt ratio may be considered as a combination of both lower return and lower risk. When the total risk was adjusted, only high profitability was shown to be rewarded by the market for the restaurant sector in this study. Additionally, profitability might act as the
middleman between these insignificant firm-specific financial factors and the total risk-adjusted performance measure. These insignificant firm-specific financial factors might significantly determine the value of profitability, which in turn, effectively affected the Sharpe ratio. Thus, market or investors perceived restaurant firm performance based only on firm’s profitability as evidenced by this study for whatever reasons. This finding confirmed that profitability was a good indicator of firm performance (Hoskisson et al., 1994). An increase in profits could evidently improve restaurant total risk-adjusted firm performance.

**Strategic Suggestions for the Restaurant Sector**

Restaurants can implement certain financial strategies to improve their performance. Restaurant firms could finance their capital through issuing more common stocks and less debt to improve their performance as increased leverage (debt ratio) was significantly and negatively related to firm performance. Less debt was still preferred though the restaurant sector was in the relative low-debt category. Being a well-established and mature industry, it is very difficult for restaurants to achieve relatively higher returns. Thus, the key for restaurant management was to lower financial risk through a reduction of debt percentages to improve firm performance. Further, it proved to be both safer and better to keep debt at a fairly lower level in a much fluctuated economic conditions during 2000-2004 for the restaurant sector.

The positive relationship between liquidity and firm performance in this study suggests that an increase in liquidity value can also help a restaurant firm improve its performance by either decreasing its current obligations or increasing it current assets. The average current ratio of the restaurant sector was .933, indicating it was a less liquid
sector. During the economic fluctuation of these 5 years, holding relative more liquid assets could reduce potential bankruptcy costs in an unstable economic environment. While it is hard to adjust the left side of the balance sheet (i.e., the assets structure), restaurant managers can certainly either transform current liabilities to long-term debts or retire some portion of current liabilities by issuing more stocks to make the firms more liquid.

Growing restaurants into bigger and larger organizations and diversifying restaurant into more business segments with a reduction of dividend payout could be other means to improve firm performance due to the significant relationship between size, business diversification, sales growth, dividend policy and firm performance. Restaurants used to be considered small companies. Growing into larger firms can help them increase their visibility and publicity among the public as well as enhance their market dominance, share and bargaining power. This was particular true for restaurant firms to withstand the market fluctuations. Restaurants may sustain their growth by retaining more of their profits into retained earnings for their future development, sacrificing current dividend payout for their future rapid growths, and diversifying the business into related business segments, such as franchise operations and retailing businesses.

The positive relationships between profitability ratio, activity ratio and restaurant performance have confirmed the importance of the management effectiveness and efficiency. Both sales and profits are very important to the health of the restaurant sector. These two accounting measures can also be utilized to align management’s benefits with shareholder’s.
The Hotel Sector

Proxy Q

Under the perspective of unit effects, solvency, sales growth and size were deemed to significantly affect hotel firm performance as measured by the Proxy Q during 2000-2004. Solvency negatively affected firm performance, similar to what have been found in the restaurant sector. The costs of adding more debt outpaced the benefits of debts. Sales growth and size, on the other hand, showed significant and positive impacts on firm performance. These results were consistent with the previous studies (Capon et al, 1990; Child, 1972; John, 1993; Keating, 1997; Keats & Hitt, 1988). Compared to their peers in other industries, hotel companies with relatively higher values of sales growth and total assets and lower percentage of debt usage were more likely to achieve better firm performance. Higher sales growth and larger firm size reflected firm's great outlook of future earnings and market dominance, which also improved hotel performance. Using less debt was once again confirmed to gain better firm performance for hotel firms. The remainder of firm-specific financial factors yielded non-significant impacts on hotel firm performance.

When only time differences were considered, liquidity, activity, profitability, and dividend variables appeared to greatly and positively influence hotel firm performance during 2000-2004. On the other hand, this study found more business diversifications might result in poor hotel performance. These findings were consistent with some previous studies (Baskin, 1987; Comment & Jarrell, 1994; Jacobson, 1987; Lang & Stulz, 1994; Mooradian & Yang, 2001; Myers, 1977; Roenfeldt & Cooley, 1978; Varaiya & Kerin, 1987). Hotel firms could improve their performance over time by incrementing the
values of liquidity, activity ratio, profitability, and dividend payout which had positive
relationships with firm performance. Holding more current assets may enhance firm’s
financial position to stay away from potential bankruptcy in the unstable economy
(Moyer et al., 2001). Improvement on internal management as measured by the
management effectiveness and efficiency (i.e., activity ratio and profitability), enhanced
firm performance as well. More dividend payouts satisfied the interests of various
stakeholders of hotels. Furthermore, the unique features of the hotel sector, such as 24/7,
seasonality, perishability, cyclicality, service orientation, differ itself from most other
industry sectors. The knowledge gained from the hotel business is difficult to transfer to
other businesses. Higher business diversification implies lower relatedness among
different properties within a firm. Thus, hotels were suggested not to diversify into other
business segments as such may ruin firm performance.

Similar to the results found in the restaurant sector, whether hotel business had
foreign presence or not did not significantly affect firm performance. About 30% of hotel
observations (firm/year) had significant foreign sales, but these moves did not have
significant impacts on firm performance. The motive for hotels to have foreign presence
was questionable from the viewpoint of financial performance.

Sharpe Ratio
Sales growth appeared to be the only significant factor on hotel firm performance as
measured by the Sharpe ratio from 2000-2004 when only firm effects were considered.
The better hotel firm performance was associated with a higher growth rate. In other
words, higher growth signaled a better firm performance perceived by the market in an
unstable economic condition. Rapid sales growth was a value added strategy which
resulted in improved hotel firm performance. The result was in line with the findings by Keats and Hitt (1988) and Child (1972). On the other hand, dividend and business diversification affected hotel firm performance in a significant way under the assumption of only time effects. Hotels with fewer business diversifications and more dividend payout tended to have better firm performance over themselves. Thus, hotel firm's sales growth, dividend policy and business diversification were perceived to be important by the market. The benefits (returns) associated with higher growth, more dividend payout and fewer business diversifications were greater than the costs (risks) embedded with these practice, thereby improving total risk-adjusted hotel firm performance. On the other hand, this study found that liquidity, solvency, activity, profitability, geographical presence did not demonstrate significant impacts on hotel total risk-adjusted firm performance. The potential reason could be that these effects may have been accounted for by either firm differences or time differences measured by the Sharpe ratio in the hotel sector.

**Strategic Suggestions for the Hotel Sector**

Hotel firms can take certain actions to adjust their financial policies to improve their performance. The empirically negative relationship between solvency and firm performance suggests that hotel firms' current debt leverage has exceeded the optimal level and reducing debt use can improve firm performance. Though debt usage could bring a number of benefits such as less cost of capital and tax shields, the financial costs and risks associated with higher debt ratio exceeded the benefits, leading to poorer firm performance. Similar to the suggestions given to the restaurant businesses, hotels are also recommended to go back to the optimal capital structure by a reduction of debt.
percentages. Although the interest rates were at the historical lower levels during these 5 years, the influx of more debt bearings for hotels did harm to their performance. Hotel firms could improve their performance by retiring or converting debt to stocks. A prudent financing mix leaning toward relatively low debt is advisable. Similar to the suggestions given in the restaurant sector, hotels are advised to remain conservative; that is, using less debt in an unstable economic environment.

Hotel should make the companies more liquid by changing the mix of current accounts to enhance firm performance as more liquidity improved firm performance. The liquidity shortage costs were tested to overwhelm the liquidity holding costs. Thus, hotel firms are suggested to approach the optimal liquidity structure by adding more liquid assets. The possible reason was again that more flexibility in liquid assets can greatly mitigate the financial stress costs in an uncertain circumstance.

Sales growth was found to be a significantly positive factor to hotels as well. Not only can sales growth increases its market share, and synergy, but also increase a firm’s publicity and hold out the economic swings. The series of merges and acquisitions which increase both assets and revenues in the hotel sector in recent years appeared to be successful. Meanwhile, the significant and negative sign of business diversion suggested hotels’ keeping focused on the core accommodation business rather than expand to other business sectors in order to reduce potential market risks. Diversification into other business segments had adverse consequences for hotels, due to increasing costs in diversified resources. Furthermore, distribution of dividend in the hotel sector was perceived to be good. Since the hotel is a highly cyclical business, the return on investment of hotels would be less than the market average during the economic
downturn. Thus, it was wise to distribute the dividend to its shareholders during 2000-2004 for hotel companies.

Profitability and activity ratio gauge the effectiveness and efficiency of the decision making process and assets utilization of a hotel firm. They are two internal financial benchmarks to guide hotel’s operation and measure how good the management team is. Increasing profits and enhancing effectiveness and efficiency are involved with more than just financial strategies. Great marketing ideas, new products development, consistent quality service, right price approaches, and implementation of good projects can enhance hotels profitability and activity ratio, thereby improving firm performance. Improving and maintaining profitability and activity ratios high can draw hotel firms towards value maximization, which is the best interest of the shareholders. Management at all levels should drive its capability to pursue for these objectives.

Recommendations for Future Research

The relationship between firm-wise financial factors and firm performance was empirically evaluated in the hospitality industry from 2000 through 2004. This study provides a foundation on which future studies can be developed.

First, the success of the hospitality industry rests on its ability to service the needs of both customers, as measured by the satisfaction and loyalty, and shareholders, by firm financial performance. The models advanced in this study may help hospitality managers satisfy the needs of shareholders to improve firm performance vis-à-vis firm-specific financial factors. Aside from financial performance measures, some subjective or judgmental performance ones, which are customer-based and employee-based, such as
customer and employee satisfaction or loyalty, may be used in the future along with the objective financial performance measures.

Second, some theoretical constructs, such as managerial ownership and institutional ownership, which were reviewed in Chapter 2, were not empirically examined in the study, owing to the lack of data sources. Inclusion of both managerial ownership and institutional ownership variables in the model may provide more comprehensive outlooks for the hospitality industry.

Third, this study examined the impacts of unit effects and time effects in panel data separately because of the software’s constraints. A more realistic picture could have been painted if both unit and time effects were simultaneously tested in one equation with much more smooth interpretations.

Fourth, it may be noted that no significant results were found when the Treynor ratio was used as the measure of systematic risk-adjusted firm performance in both the restaurant and hotel sector. This may deserve further investigations for a future study.

Finally, as with much research of this similar nature, the findings in different time periods might be different (Keats & Hitt, 1988). Thus, future studies may examine the model in the context of another time frame to confirm the findings and conclusions of this study. Comparisons of similar models in different time spans might reveal important implications for hospitality managers.
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116

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VITA

Graduate College
University of Nevada, Las Vegas

Zhenxing Mao

Local Address:
1600 E University Ave Apt 130
Las Vegas, Nevada 89119

Home Address
Room 405 Building 39, Ma Jun Xiang Xiao Qu
Huzhou, Zhejiang Province, China 313000

Degrees:
Bachelor of Science, Tourism Economics, 1996
Hangzhou University

Master of Science, Hotel Administration, 2001
University of Nevada, Las Vegas

Master of Science, Computer Science, 2003
University of Nevada, Las Vegas

Special Honors and Awards:
UNLV GREAT Assistantship, University of Nevada, Las Vegas (2005 and 2006)

Publications:


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Dissertation Examination Committee:
Chairperson, Dr. Zheng Gu, Ph.D.
Committee Member, Dr. Karl Mayer, Ph.D.
Committee Member, Dr. Billy Bai, Ph.D.
Graduate Faculty Representative, Dr. Marcus Rothenberger, Ph.D.