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# A comparative analysis of investment returns on hotels and casino hotels through the recession

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**A comparative analysis of investment returns on hotels and casino hotels through  
the recession**

by

**Yani Wei**

A thesis submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
MASTER OF SCIENCE

Major: Hospitality Management

Program of Study Committee:  
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Ames, Iowa

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## ABSTRACT

This research applied Jensen's alpha measure to analyze investment returns of hotels and casino hotels through the recent recession to determine if there were: (a) differences in risk-adjusted performance of these two types of hotels through various periods of the recession; and (b) which hotel outperformed the other during each period of the recession. The literature review addressed types of crises, the recession's impact on the hospitality industry, differences between casino hotels and hotels, and methods of investment returns. Given the purpose of this dissertation, Jensen's alpha measure was selected to measure the rate of return of hotels and casinos hotels. This study used weekly data of publicly traded hotel companies and casino hotel companies from January 2006 to December 2011, which consists of time periods of before, during, and after the recession. December 2007 to June 2009 was considered during the recession (The National Bureau of Economic Research, 2012). In addition to these three time periods, this study also examined the performance of hotels and casino hotels through the entire data by one-way ANOVA and independent t-test.

The paper, entitled "A comparative analysis on investment returns of hotels and casino hotels throughout the recession," examined compared investment returns before, during, and after the recent recession in comparison with the overall market. Each hotel category was compared with each other and with S&P 500 index. Beta was calculated using the weekly return of the stock and S&P 500, and return of 7-day U.S. Treasury bill was used as risk-free rate of return. Jensen's measure was performed on each property through four different time periods to test whether the two kinds of hotel perform better than the whole market portfolio. Finally, two one-way ANOVA and four *t*-tests were employed to determine if there were differences in performance in individual hotel

sections throughout the recession. Findings revealed a high risk-adjusted performance with low market risk for both casino hotels and hotels. The mean Jensen alphas during various periods differed regardless of hotel or casino hotel section. Additionally, in the duration before the recession, casino hotels outperformed hotels, whereas during the recession, hotels performed casino hotels.

## CHAPTER 1. INTRODUCTION

### Background

The hospitality industry has long been considered a mirror of the economy. In other words, it has a close relationship with the economy. For example, during the period of 1993 to 2000, a phenomenal growth in the economy in the United States provided a catalyst for the development of luxurious casino hotels in many regions (Jang & Yu, 2002). However, during the economic recession period of 1990 – 1991, the hotel industry suffered from reduced profitability (Kim, Mattila, & Gu, 2002).

The lodging sector plays an important role in the hospitality industry. Despite decades of research concentrated on measuring the different economic and social variables that may affect the development of the lodging sector, little attention has been paid to investment returns of different types of hotel properties, particularly casino hotel and hotel sectors. Therefore, hotel investors managing portfolios have difficulty in making decisions regarding designing an asset allocation strategy or selecting a specific set of securities, especially during economic downturns. On one hand, having prior information on the investment returns of different types of hotels in various economic conditions would enable investors to make a better comparison among investments exhibiting potential market risk. On the other hand, in order to build a more effective portfolio for allocation decisions, investors and practitioners must take into account the unique investment characteristics of the hotel industry, such as high volatility, unstable cash flows, low risk-adjusted returns, and low institutional support (Newell & Seabrook, 2006; Contractor & Kundu, 1998). Thus, lack of reliable and sufficient financial performance on different types of hotels may result in misallocation of capital in hotel development, especially during a period of recession.



The recent recession has been considered the worst economic period since the Great Depression, and the global economy is still recovering (Britt, 2012). The recession spread economic difficulties worldwide in both developed and in developing countries. Like any other industry, the U.S. lodging and tourism industry was severely affected and the performance of lodging stocks plunged significantly. Consequently, drastic economic changes and the unstable situation of the hospitality industry provided researchers a valuable opportunity to examine the influence of the economic shift on the investment performance of hotels, such as casino hotels and hotels. Nevertheless, due to very different nature of the industry, hotels and casino hotels are different in terms of market segments, marketing strategies, major sources of income, and business profitability (Trowbridge, 1996).

### **Purpose and Objectives**

The purpose of this research was to examine and compare the investment returns of hotels, casino hotels, and overall hotels (including both hotels and casino hotels) before, during, and after the recent recession in comparison with the overall market by using Jensen's alpha measure. The objectives were to:

1. Examine which, if any, casino hotels or hotels perform better than the whole market portfolio through the recession, and whether their stock system's risks are significantly affected by this event;
2. Examine whether there are differences on risk-adjusted performance of these two types of hotels through various periods of the recession; and
3. Determine which type of hotel outperforms than the other one during each period of the recession. In other word, identify how much better one type of hotel performances than the other one.

### Significance of Study

Sine no known study has been identified that compared the returns of hotels and casino hotels under different economic conditions using risk-adjusted measures, the findings of this study will provide investors and practitioners with insight into the behaviors of different types of hotel stocks, and in turn, help them make more informed decisions under different economic conditions.

### Definition of Terms

The following terms were defined for this research:

**Capital Asset Pricing Model (CAPM):** Indicates what should be the expected or required rates of return on risky assets. It can help investors value an asset by providing an appropriate discount rate to use in any valuation model. The general idea behind CAPM is that investors need to be compensated in two ways: time value of money and risk. The time value of money is represented by the risk-free ( $r_f$ ) rate in the formula and compensates the investors for placing money in any investment over a period of time. The other half of the formula represents risk and calculates the amount of compensation the investor needs for taking on additional risk. This is calculated by taking a risk measure (beta) that compares the returns of the asset to the market over a period of time and to the market premium ( $r_m - r_f$ ) (Reilly & Brown, 2006).

**Jensen's alpha measure:** Used to determine the abnormal return of a security or portfolio of securities over the theoretical expected return. In this method, the security could be any asset, such as stocks, bonds, or derivatives. A market model, most commonly the Capital Asset Pricing Model (CAPM) model, predicts the theoretical return. The market model uses statistical methods to predict the appropriate risk-adjusted return of an asset.

***North American Industry Classification System (NAICS):*** Used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. It was developed jointly by the U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's Instituto Nacional de Estadística y Geografía, to allow for a high level of comparability in business statistics among the North American countries (U.S. Department of Commerce, 2013).

***Recession:*** In the United States, the National Bureau of Economic Research (NBER) defined the recent recession beginning at December 2007 and ending at June 2009 in terms of the gross domestic product (GDP) that is reduced for two or more consecutive quarters (The National Bureau of Economic Research, 2012).

***Sharpe's measure:*** A composite measure of portfolio performance that is similar to Treynor's measure. It measures the total risk of the portfolio including the standard deviation of returns rather than considering only the systematic risk summarized by beta (Sharpe, 1966).

***Treynor's measure:*** The first composite measure of portfolio performance that includes risk. Treynor (1965) postulated two components of risk: (1) risk produced by general market fluctuations; and (2) risk resulting from unique fluctuations in the portfolio securities.

## Thesis Organization

This thesis begins with a review of literature regarding crisis types, the impact of the recession on the hospitality industry, differences between casino hotels and hotels, and CAPM-based models. Next, the method used in this study is described in detail followed by a manuscript that will be submitted to a peer-reviewed journal. Conclusions, appendices, references, and acknowledgement will conclude the thesis.

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## CHAPTER 2. LITERATURE REVIEW

### Introduction

Very little research has been published regarding hotel financial performance. Most hotel performance research is proprietary and pertains to hotel property valuation or general performance indexes. In this literature review, the recession's impact on returns in the hospitality industry is discussed as well as the relationship between casino hotels and hotels.

The first section presents a review of the types of crises and how the recession differs from other crises. The second section specifically focuses on the recession's impact on the hospitality industry. Economic statistic data are provided on the loss of this recession that include general business fields as well as hospitality industry. The third section examines the relationship between casino hotels and hotels. A review is presented explaining how casino hotels and hotels differ based on their unique nature, and how different items are used to judge hotel performance. The final section contains information on measurement tools for hotel performance.

### Crisis Types

Managers of business operations may encounter various types of crisis. Broadly speaking, crises may be divided into two overall types, namely, those that arise externally and those that are self-inflicted. Lerbinger (1997) divided crises into the three broad categories and seven specific categories, shown in Table 2.1. The seven specific categories are: confrontation, deception, malevolence, misconduct, natural disaster, skewed values, and technology failure.

**Table 2.1. Crisis types**

Major factors	Specific environment	Types	Examples
External	Physical	Natural disaster	Earthquake damages a hotel property, and volcano eruption.
		Technology failure	Oil spill contaminates a resort beach and prevents tourists from visiting the resort.
Internal	Human or social	Confrontation	Labor strike disrupts normal operations; special-interest group boycotts restaurant.
		Malevolence	Terrorists attack; food is poisoned; economy crisis.
	Management failure	Skewed values	Cruise ships dump waste oil values into the ocean (ranking short-term costs over concern for the environment).
		Deception	Restaurant knowingly serves spoiled or contaminated food item.
		Misconduct	Corporate CFO embezzles funds or receives kickbacks.

Source: Otto Lerbinger, *The Crisis Manager: Facing Risk and Responsibility* (Mahwah, New Jersey: Lawrence Erlbaum Associates, 1997), pp. 10–14.

### **Physical environment**

Natural disasters and technology failure are crises of the physical environment.

Natural disasters have almost always been a threat to hospitality operations. For example, operations in the Caribbean islands and Hawaii are often interrupted by hurricanes, such as the destructive effects caused by Hurricane Luis and Hurricane Marilyn on St. Thomas, St. John, and St. Croix in September 1995. Technology failure relates to accidents caused by human application of science and technology.

### **Social environment**

Confrontation and malevolence are crises of the human and social environment.

Labor-union strikes and boycotts of products and services are some commonly used confrontation tactics that may cause a business crisis. Crises of malevolence refer to the

criminal acts or extreme tactics used by individuals or groups against a business organization or an entire industry. Malevolent acts include product tampering, extortion, corporate espionage, and terrorism. These extreme measures aim to destroy a company's business or a country's economic system.

### **Management failures**

Crises generated by management failures arise as a result of skewed values, deception, and misconduct. Unreasonable financial expectations and failures of corporate governance are often at the root of these unethical or sometimes criminal actions of corporate leaders. Such crises can destroy owners' and share-holders' value in the company.

Crises share three distinct characteristics: suddenness, uncertainty, and time compression. A crisis normally occurs suddenly, even when some early warning signs are detectable. A crisis that is unpredictable and erupts suddenly, as in the case of terrorist attacks, is considered as the most shocking crisis.

## **Impact of Recession on Returns in the Hospitality Industry**

### **Previous two recessions**

The previous two recessions (1990-1991 & 2000-2001), as defined by The National Bureau of Economic Research (2012), lasted eight months each, and only two of the ten previous post-depression downturns lasted as long as a full year. Since the 2001 U.S. recession, a series of events occurred that impacted the tourism and hospitality industry, including the following: the 9/11 terrorist attacks, the tsunami in Southeast Asia; the SARS outbreak; major earthquakes in Tahiti and Peru; and the volcanic eruption in Europe. While the impact of these events was limited to the regions of occurrence for a



relatively short period, the latest recession, starting in December 2007, lasted globally more than two years. It is widely accepted that the cause of this recession was the housing downturn, which started in 2006. The fall of housing prices from peak levels reached earlier this decade cut deeply into home construction and purchases. This also caused a sharp rise in mortgage foreclosures, which, in turn, resulted in losses of hundreds of billions of dollars among the nation's leading banks as well as a tightening of credit (Quiros, 2009).

### **The recent recession**

The impact of the recent recession on entire economy is significant because the recession brought about more significant downturns in the entire market system than economic expansion. Ahn, Song, and Sung (2011) indicated that, unlike other downturns over the past few decades, all of which had short-term impacts, this economic crisis had a far greater influence on the market, and it was the financial services sector that ushered in massive unemployment and bankruptcies.

One of the most widely recognized indicators of a recession is a higher unemployment rate. For example, at the end of the recession, in June 2009, unemployment rate was 9.5%. In the months after the recession, the unemployment rate peaked at 10.0% (in October 2009), and it had been at or below that rate for the previous 30 months. Compared with previous recessions, a higher proportion of long-term unemployed (those unemployed for 27 weeks or longer) in the recent recession and its post-recession period was notable (United States Department of Labor, 2012). Within these two years of recession, average expenditures per consumer unit dropped from \$52,203 in 2007 to \$48,109 in 2010, and spending decreased in every major category except healthcare (United States Department of Labor, 2012). The economic recession

also triggered a series of company bankruptcies. For example, more than 300 U.S. publicly traded companies, including long-lasting giant firms such as General Motors and Chrysler, were bankrupted, and the debt of \$613 billion from Lehman Brothers was the largest bankruptcy in US history (Alman, Cudmore, & McVeigh, 2012).

At some level, the deteriorating economic circumstances impact all kinds of industries. Few businesses and industries have not been affected, the hotel and tourism industry included. Inevitably, the drastic contrast between the two periods—before the recession versus during the recession—is manifested in marketing performance. For companies that struggle for survival, expanding market share is often the first line cut from their short-term business goal or strategy, and the reduced budget impels hotel managers to implement more cost-effective tactics in routine management. In addition to the changes in market situation, changes in consumer perceptions driven by the vulnerability of the market also influence their consumption habits.

Findings of research by Lee and Goldblatt (2012) revealed that, during such difficult times, individuals and communities are forced to scale back or even cancel vacation plans or business trips, and corporate sponsors are more cautious to support external marketing program budgets while simultaneously reducing their staff budgets. In particular, based on previous research by Chen (2011), hotel stock returns are more sensitive to general economic state variables than the other variables, and would be seriously harmed by crisis events. Therefore, an economic downturn leads to declining tourism and hospitality markets (Mao & Gu, 2008). The data from casino hotel and hotel stock market returns reflect this contraction in terms of stock.

A number of studies have focused on the economic impact of hospitality industry on hotel stock returns. Chen, Kim, and Kim (2005) revealed that, despite the challenging

economic times, only money supply, and the unemployment rate can significantly explain the movement of hotel stock returns.

Following the investigation of the link between hotel stock returns and macroeconomic factors in the hospitality finance literature, Chen (2007) studied the relationship between hotel stock performance and monetary conditions. A study was conducted of the performance of Taiwanese hotel stocks under two various monetary policy environments, and the impact of different monetary stringency on the relationship between hotel stock returns and macro variables in Taiwan. Empirical results showed that hotel stocks exhibited a higher mean return and reward-to-risk ratio during expansive monetary periods, and the connection between hotel stock returns and macro variables behaved differently under various monetary conditions.

Nevertheless, there have been few documented research studies on recessions in the hospitality field, especially, no comparative analysis has been made of the performance of casino hotel and hotels during the recession. Several empirical studies have attempted to examine influence of a particular event on local hospitality industry. Pine, Chan, and Leung (1998) examined the impact of the Asian economic downturn on the hospitality and tourism industry, and reviewed the region's hospitality trends and environments. Chen, Jang, and Kim (2007) investigated the effect of the SARS epidemic on Taiwanese hotel stock price movements. However, these findings could not be generalized to the entire hotel sector. These events were limited to local areas, and did not show a detailed account regarding the different impacts on various types of hotels. Therefore, it is uncertain whether the findings from the previous studies may be directly applied to current hotel and casino hotel financial performances, as the latest recession has been longer, more severe, and wider in its impact than previous recessions.

### **Hotels vs. Casino Hotels**

The casino hotel has many characteristics that differ from hotels. For example, the products and market segments of the casino hotel industry are unique; it is labor and asset intensive, and the industry is rapidly expanding and is highly leveraged. In addition, there has been a recent trend toward consolidation and expansion, leading to larger firms.

Casinos do not carry much inventory that is mostly perishable foods, and gaming companies carry practically no receivables because gaming is generally a cash business (Mills & Yamamura, 1998).

The different characteristics of hotels and casino hotels have been documented in the literature (Jang & Yu, 2002; Ryu & Jang, 2004; Van Hoof, Vallen, & McDonald, 1996). Van Hoof et al. (1996) identified unique nature of casino hotel with regarding to market segments, marketing strategies, major sources of income, and business profitability. This research formed the basis for selecting these two types of hotels as the objectives in the current study.

The two studies that are directly comparable to the current study are: Jang and Yu (2002), and Ryu and Jang (2004), which revealed the different financial performances of hotels and casino hotels. Jang and Yu (2002) examined some important investment variables for investing the two types of hotels in the United States from 1994 to 1998 using the data of the Value Line Data File. They suggested that the type or the size of hotel is not a factor affecting return on hotel investment, and that casino hotels show higher effectiveness in using assets to generate revenue. And yet, the limited variables chosen is a major drawback of the study, which may need further study on explaining whether or how the different returns exist between these types of hotels and the overall market.

Ryu and Jang (2004) examined the performance of commercial hotel and casino hotels by using cash flow ratios and traditional financial ratios. Liquidity, solvency, and operational efficiency indicators measured the performance of two types of hotels. The findings revealed that, unlike hotels, casino hotels have better liquidity, solvency, and profitability than commercial hotels. When considering the contrast in findings by Jang and Yu (2002) findings, one may perceive that a different financial performance would result based on the type of hotel.

The aforementioned studies did not reach a consistent conclusion on the performance of different types of hotels (hotels and casino hotels), nor did they consider comparative analysis for the cross-industry (hotels and overall market). To fill this gap and help investors make informed decisions, the current researcher concentrated on comparing the performance of hotels, casino hotels, and the overall market during the different periods (before, during, and after) the recent recession.

### **Methods for Generating Investment Return**

Given that lodging sector playing an important role in hospitality industry, decades of studies have focused on measuring the different economic and social variables that affect the development of lodging sector. However, little attention has been paid to the investment returns of different types of hotel properties, particularly casino hotel and hotel sectors during the recent recession.

Newell and Seabrook (2006) reported the findings of a survey of major hotel investors and hotel owners/operators in Australia regarding the factors influencing hotel investment decision-making. Among 30 factors influencing hotel investment decision-making, they found that the main factors influencing hotel investment decision-making were financial and location factors. These were followed by economic, diversification,

and relationship factors. These findings revealed three levels of importance in the factors influencing hotel investment decision-making.

Contractor and Kundu (1998) studied hotel entry model. Their findings indicated that the choice of “entry mode” is determined by country or environmental variables, as well as hotel-specific variables, such as high volatility, unstable cash flows, low risk-adjusted returns, and low institutional support.

Many hotel investment decisions that aim to design an asset allocation strategy and select the specific set of securities to form portfolios are difficult to be made when investors manage their portfolios, especially during economic downturns. On one hand, information on investment returns for different types of hotels in different economic conditions would enable an investor to make a better comparison among investments exhibiting potential market risk. On the other hand, in order to make more effective portfolio allocation decisions, investors and practitioners must take into account the unique investment characteristics of the hotel industry. Thus, to avoid misallocation of capital when making investment decision, in particular, during the period of recession, it is necessary to know about reliable and sufficient financial performance of different types of hotels.

### **Capital Asset Pricing Model (CAPM)**

When seeking reliable and reasoned information, computing average investment returns for a certain time does not mean the task is done. Risk-adjusted returns need to be taken into consideration before investment returns can be compared meaningfully. The simplest and most popular way to adjust returns for investment risk is to compare rates of return with those of other investment funds having similar risk (Bodley, Kane, & Marcus,

2005). However, such comparisons can be misleading due to the difficulty of providing an accurate definition.

Some commonly used risk-adjusted performance measures are Treynor's measure, Sharpe's measure, and Jensen's measure (portfolio alpha) (Bodie, Kane, and Marcus, 2005). These three risk-adjusted measures are based the assumption that on Capital Asset Pricing Model (CAPM), which states that the expected return on a portfolio is equal to the risk-free rate of return plus the product of beta and the difference between market risk premium and risk-free rate of return. In other words, CAPM is a model that indicates what should be the expected or required rates of return on risky assets. This transition helps investors value an asset by providing an appropriate discount rate to use in any valuation model. Alternatively, this model can compare the estimated rate of return to the required rate of return, and determine whether the asset is undervalued, overvalued, or properly valued.

There are four assumptions in the development of the asset-pricing model. First, it is assumed that all investors are single period risk-averse utility of terminal wealth maximizes and can choose among portfolios solely on the basis of mean and variance; second, there are no taxes or transactions costs; third, all investors have homogeneous views regarding the parameters of the joint probability distribution of all security returns; at last, all investors can borrow and lend at a given riskless rate of interest. The main result of the model is a statement of the relation between the expected risk premiums on individual assets and their "systematic risk." The relationship is

$$E(R_i) = R_f + \beta_i (E(R_m) - R_f) \quad (1)$$

Where:

$E(R_i)$  is the expected return on the capital asset;

$R_f$  is the risk-free rate of interest, such as interest arising from government bonds;

$\beta_i$  (the beta) is the sensitivity of the expected excess asset returns to the expected excess market returns;

$E(R_m)$  is the expected return of the market;

$E(R_m) - R_f$  is sometimes known as the market premium (the difference between the expected market rate of return and the risk-free rate of return).

### **Treynor's composite performance measure**

Treynor (1965) developed the first composite measure of portfolio performance that included risk. Building on developments in capital market theory, he introduced a risk-free asset that could be combined with different portfolios to form a straight portfolio to form a straight portfolio possibility line. He was interested in a measure of performance that would apply to all investors, regardless of their risk preference. Building on developments in capital market theory, he showed that rational, risk-averse investor would always prefer portfolio possibility lines with larger slopes because such high-slope lines would place investors on higher indifference curves. The slope of this portfolio possibility line is equal to

$$T = \frac{r_i - r_f}{\beta_i} \quad (2)$$

Where:

$T$  = Treynor ratio;

$r_i$  = Portfolio  $i$ 's return;

$r_f$  = Risk free rate;

$\beta_i$  = Portfolio  $i$ 's beta.

A larger  $t$ -value indicates a larger slope and a better portfolio for all investors. All risk-averse investors would prefer to maximize this value. The risk variable beta



measures systematic risk and tells us nothing about the diversification of the portfolio. So, this measurement implicitly assumes a completely diversified portfolio, which means that systematic risk is the relevant risk measure.

### **Sharpe portfolio performance measure**

Following his earlier work on the capital asset pricing model (CAPM), Sharp (1966,1994) conceived of a composite measure to evaluate the investment performance, dealing specifically with the capital market line (CML). His measure is similar to the Treynor measure; however, it focuses on measuring the total risk of the portfolio by including the standard deviation of returns rather than considering only the systematic risk (measured by beta) employed by Treynor measure. A disadvantage of the Treynor and Sharpe measures is that they are ratios of return to risk. That is, they produce relative, but not absolute, rankings of portfolio performance (Reilly & Brown, 2006).

### **Jensen portfolio performance measure**

Another index widely used to measure the risk-adjusted performance of the portfolio is Jensen measure (Kim, Mattila, & Gu, 2002). The Jensen (1968) measure is similar to the above two measures because it is also based on the CAPM. However, the Jensen measure reflects relative performance of portfolio, and only Jensen measure evaluates the over- and under-performance of a portfolio in relative to the stock market (Han & Liang, 1995). In addition, Jensen's alpha is able to determine whether the return of a portfolio is statistically different from that of the stock market (Asbere, Kleiman, & McGowan, 1991). The Jensen performance measure is also flexible enough to allow for alternative models of risk and expected returns than the CAPM (Reilly & Brown, 2006).

Jensen's performance measure has been used by the studies of portfolio performance evaluation in many fields. Using Jensen's measure, Cumby and Glen (1990)

measured the international mutual funds, and found that most of the international mutual funds outperformed the domestic benchmark portfolio, but did not outperform the world market index. Dhar (2013) evaluated the investment management in terms of selectivity skills of managers, revealing that based on both unconditional and conditional Jensen models only some of the fund managers (approximately 25%) possess superior selectivity skills.

Jensen's measure has also been employed in hospitality financial studies. Kim, Mattila, and Gu (2002) conducted a comparative analysis of Jensen's alphas to estimate performance of hotel real estate investment trusts. They investigated the performance of hotel real estate investment trusts (REITs) over the 1993–1999 period in comparison with the overall market and six other REIT sectors. The Jensen Index was employed to measure the performance of each REIT sector relative to the market portfolio, indicating that hotel REITs carried the highest market risk as compared to other REIT sectors. The risk-adjusted return of hotel REITs was in line with that of the overall market. In addition, as a portfolio, the hotel REIT sector underperformed office, industrial, and diversified REIT sector. In terms of individual stock performance, the average performance of hotel REITs was inferior to those other REITs.

Hsu and Jang (2007) used Jensen's measure model to examine long-term post-merger financial performance of acquiring firms in the lodging industry between 1985 and 2000. Market model was also used to examine the short-term market performance. The authors did not find significant evidence that the shareholders of acquiring hotel companies earned more equity returns than the short term, which indicated there was no significant relationship between merger announcement and the change in short-term equity value. As opposed to general expectations, the study revealed that a merger has a negative effect on the acquiring firms' equity values over the long term. Therefore, this

study provided evidence that shareholders of acquiring hotel companies did not benefit from the mergers.

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## CHAPTER 3. METHODOLOGY

### Introduction

This research study was conducted to analyze the investment performance of casino hotels and hotels through the recent recession. This study included three steps: (1) examine which type of hotel performed better than the whole market portfolio through the recession; (2) examine the differences in risk-adjusted performance of these two types of hotels through various periods of the recession; and (3) determine which type of hotel outperformed the other one during each period of the recession. Jensen's measure was employed in this study, and Microsoft Excel was used to estimate beta of stocks and Jensen's alpha. In addition, the SAS software package was used to perform *t*-tests and ANOVA analyses.

### Data collection

This study used weekly S&P 500 index and weekly closing price of publicly traded hotel companies and casino hotel companies to examine and compare the performance of hotels, casino hotels, and overall hotels before, during, and after the recent recession. The time period of January 2006 to December 2011 includes dates considered as before, during, and after the recession. January 2006 to November 2007 is considered before the recession, including 100 weeks; December 2007 to June 2009 is considered during the recession, including 83 weeks (The National Bureau of Economic Research, 2012); and July 2009 to December 2011 is considered after the recession, including 130 weeks. In addition to these three time periods, this study examined the performance of hotels and casino hotels through the entire data. In other words, this study analyzed the Jensen measures of lodging stocks in four different timeframes.

Several indexes measure and report hotel values, such as the NCREF Index (National Council of Real Estate Investment Fiduciaries), Lodging Outlook (Smith Travel Research), Trends in the Hotel Industry (PKF Consulting), and the Hotel Valuation Index (Hospitality Valuation Services). These indexes have provided revealing information or databases for the hotel industry. Another important data source designed to link the two fundamental components of returns (cash flow from hotel operations and property appreciation) into a unified and total return index is now produced by new projects and additional capital injection.

This study attempted to provide performance assessment of hotels and casino hotels by Jensen measurement rather than by traditional accounting-based measurement. It examined the different performance during the recent recession for different types of hotels. Thus, in this study, the hotel and casino hotel properties examined were identified through North American Industry Classification System (NAICS) codes 721110 (hotels and motels) and 721120 (casino hotels), a total of 22 publicly traded hotel firms that are identified by Mergent Online database (see Appendix).

North American Industry Classification System (NAICS): The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. NAICS was developed under the auspices of the Office of Management and Budget (OMB), and adopted in 1997 to replace the Standard Industrial Classification (SIC) system. It was developed jointly by the U.S. Economic Classification Policy Committee (ECPC), Statistics Canada, and Mexico's Instituto Nacional de Estadística y Geografía, to allow for a high level of comparability in business statistics among the North American countries (U.S. Department of Commerce, 2013). The NAICS numbering system

employs six-digit code at the most detailed industry level. The first five digits are generally (although not always strictly) the same in all three countries. The first two digits designate the largest business sector, the third digit designates the subsector, the fourth digit designates the industry group, the fifth digit designates the NAICS industries, and the sixth digit designates the national industries.

In this study, based on the definition of NAICS, the code of 721120 represents Casino Hotels, which means that the industry comprises establishments primarily engaged in providing short-term lodging in hotel facilities with a casino on the premises. The casino on premises includes table-wagering games and may include other gambling activities, such as slot machines and sports betting. These establishments generally offer a range of services and amenities, such as food and beverage services, entertainment, valet parking, swimming pools, and conference and convention facilities. The code of 721110 represents Hotels, indicating a industry that comprises establishments primarily engaged in providing short-term lodging in facilities known as hotels, motor hotels, resort hotels, and motels. The establishments in this industry may offer food and beverage services, recreational services, conference rooms and convention services, laundry services, parking, and other services (U.S. Department of Commerce, 2013).

Each of the hotels, casino hotels, and overall hotels categories were compared with each other and with S&P 500 index. Weekly rate of return of each property, which is the percentage change in stock price, was obtained from Mergent Online. The weekly return of S&P 500 was obtained from Center for Research in Security Prices (CRSP), and used as a proxy of the market portfolio.



### Jensen's Measure

Given the purpose of this study, Jensen measure was selected to measure the rate of return of hotels, casino hotels, and S&P 500 index, and determine how the recent recession affected the performance of hotels and casino hotels.

The Jensen measure can be calculated as (Bodie et al., 2005):

$$\alpha_i = r_i - [r_f + \beta_i (r_m - r_f)] \quad (3)$$

Where:

$r_i$  is the return of stock  $i$ ;

$r_f$  is the risk-free rate of return;

$\beta_i$  is beta or systematic risk of stock  $i$ ; and

$r_m$  is the return of market portfolio.

Equation (1) can be transformed to linear equation:

$$(r_i - r_f) = \alpha_i + \beta_i (r_m - r_f) \quad (4)$$

In other words, Jensen's alpha of a stock is the constant of the linear equation and can be estimated by regressing the difference between the return of the stock and risk-free rate of return against the product of beta and the difference between return of market portfolio and risk-free rate of return.

Return of a stock, risk-free rate of return, beta of a stock, and return of the market portfolio are needed for estimating the Jensen's alpha for each property. Beta, the measure of a stock's systematic risk, is calculated using the weekly return of the stock and S&P 500. Using the weekly return of 7-day U.S. Treasury bill as risk-free rate of return, Jensen measure is estimated using Equation (4). If the Jensen's alpha is significant and above zero, it suggests that the property performs better than the market; if the Jensen's alpha is significant and below zero, it suggests that the property performs below

the market; and if the Jensen's alpha is not significantly different from zero, it suggests the property performs the same as the market.

Based on the procedure of traditional Jensen measure (1968), the linear regression model (shown in Equation 4) was driven to each of the property within each category in the different periods. Next, Jensen's alpha and the value of  $\beta_i$  for each property were calculated to test whether the risk-adjusted return outperformed over the whole market portfolio during the same period.

In addition, to examine whether hotels performed differently through and after the recent recession and to measure the magnitudes of differences, this study performed two one-way ANOVA to examine how average Alphas differ in three time periods within each category. In other words, the first comparison was among hotels before the recession, during the recession, and after the recession; the second was among casino hotels before, during, and after the recession. Moreover, Tukey's test was conducted to examine the differences among the categories. And then, performed four independent sample t-tests to examine whether Jensen's alpha was statistically significantly different from zero. The four t-tests between categories were performed for time periods of before, during, after the recession, and overall. Microsoft Excel was used to estimate beta of stocks and Jensen's alpha; and SAS software package was used to perform t-tests and ANOVA analyses.

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## **CHAPTER 4. A COMPARATIVE ANALYSIS OF INVESTMENT RETURNS ON HOTELS AND CASINO HOTELS THROUGH THE RECESSION**

A manuscript to be submitted to the *Journal of Hospitality Financial Management*

### **Abstract**

**Purpose** – Using Jensen’s measurement, this study examines the different investment returns on hotels and casino hotels through the recent recession.

**Design/methodology/approach** – This study uses weekly data of publicly traded hotel companies and casino hotel companies from January 2006 to December 2011, which consists of time periods of before, during, and after the recession. In addition to these three time periods, this study will examine the performance of hotels and casino hotels through the entire data. So, this study analyzes the Jensen’s alpha measures of lodging stocks in four different timeframes. Hotel and casino hotel properties to be examined will be identified using North American Industry Classification System (NAICS) codes 721110 (hotels and motels) and 721120 (casino hotels). Each of the hotels, casino hotels, and overall hotels categories will be compared with each other and with S&P 500 index. Return of a stock, risk-free rate of return, beta of a stock, and return of the market portfolio are needed for estimating the Jensen’s alpha measure of a stock. Beta is calculated using the weekly return of the stock and S&P 500, and weekly return of 7-day U.S. Treasury bill is used as risk-free rate of return. Jensen’s measure is performed on each property through four different time periods to test whether the two kinds of hotel perform better than the whole market portfolio. Next, two one way-ANOVA and four *t*-tests are employed to check whether there are difference on performance of individual hotel section through the recession.

**Findings** – The period of during recession seemed to present high risk-adjusted performance with low market risk than the market portfolio for both casino hotels and hotels. No matter of hotel or casino hotel sections, the mean Jensen alphas of various periods all differed from each other, except the two groups: overall vs. during the recession. To get informed information, the t-tests show that in the duration of before the recession, casino hotels outperform over hotels. On the other hand, during the recession, the results revealed a marginally significant outperformance for hotels over casino hotels.

**Research limitations/implications** – Since no known study has been identified that compared the returns of hotels and casino hotels under different economic conditions using risk-adjusted measures, the findings of this study will provide investors and practitioners with insight into the behaviors of different types of hotel stocks, and in turn, help them make more informed decisions under different economic conditions.

## **Introduction**

The recent recession has been considered the worst economic time since the Great Depression and the global economy is still recovering (Britt, 2012). The recession spread the economic difficulties worldwide in both developed and in developing countries. Like any other industry, the U.S. lodging and tourism industry was severely affected and the performance of lodging stocks plunged significantly for hospitality industry has long been considered a mirror of economy, namely, a close relationship with economy. In addition, drastic economic changes and the unstable situation of the hospitality industry provide researchers a valuable opportunity to examine the influence of the economic shift on the investment performance of hotels, such as casino hotel and hotel.

Due to very different nature of the industry, hotels and casino hotels have been found different in terms of market segments, marketing strategies, major sources of

income, and business profitability (Trowbridge, 1996; Shawn, J & Larry, Y, 2002).

However, no study has been identified that examined and compared the performance of different types of lodging stocks under different economic conditions using risk-free performance measure.

Therefore, to help investors and practitioners make informed decision, particularly during economic downturns, this study attempts to use Jensen's alpha measure to examine and compare the performance of hotels, casino hotels, and overall hotels (including both hotels and casino hotels) before, during, and after the recent recession in comparison with the overall market. For the purpose of this study, each of the three categories will be considered as an investment portfolio.

## **Review of Literature**

### *Recession impact on returns on hospitality industry*

The impact of the recent recession on entire economy is significant because a recession brings about more significant downturns in the entire market system than does the economic expansion. One of the most widely recognized indicators of a recession is a higher unemployment rate. For example, at the end of the recession, in June 2009, unemployment rate was 9.5 percent. In the months after the recession, the unemployment rate peaked at 10.0 percent (in October 2009), and it had been at or below that rate for the previous 30 months. Compared with previous recessions, the higher proportion of long-term unemployed (those unemployed for 27 weeks or longer) in the recent recession and its post-recession period is notable (United States Department of Labor, 2012). Within these two years of recession, average expenditures per consumer unit have dropped from \$52,203 in 2007 to \$48,109 in 2010, and spending decreased in every major category except healthcare (United States Department of Labor, 2012). The economic recession

also has triggered a series of company bankruptcies. For example, more than 300 US publicly traded companies, including long-lasting giant firms such as General Motors and Chrysler, were bankrupted, and the debt of \$613 billion from Lehman Brothers was the largest bankruptcy in US history (Alman, Cudmore, & McVeigh, 2012).

At some level, the deteriorating economic circumstances impact all kinds of industries. Few businesses and industries have not been affected, the hotel and tourism industry included. In particular, based on previous research, hotel stock returns are more sensitive to general economic state variables than the other variables, and would be seriously harmed by crisis events (Chen, 2011). Since, during such difficult times, individuals and communities are forced to scale back or even cancel vacation plans or business trips, and corporate sponsors are more cautious to support external marketing program budgets while simultaneously reducing their staff budgets (Lee & Goldblatt, 2012). Therefore, the economic downturn leads to declining tourism and hospitality markets (Mao & Gu, 2008). The data from casino hotel stock markets and hotel stock markets in terms of stock return reflect this contraction.

A number of studies have been focused on the economic impact of hospitality industry on hotel stock returns. Chen, Kim, & Kim (2005) revealed that despite the challenging economic times, only money supply and the unemployment rate significantly can explain the movement of hotel stock returns. Chen (2007) further investigated the relationship between hotel stock performance and monetary conditions. Weinbaum (2009) using historical return data on hospitality stocks showed that there was substantial market timing in the hospitality.

However, there have been few documented research studies on recessions in hospitality field, especially, no comparative analysis of performance on casino hotel and hotels during the recession. Several empirical studies that attempted to examine influence

of a particular event on local hospitality industry. Pine, Chan, & Leung (1998) first examined the impact of the Asian economic downturn on the hospitality and tourism industry, and reviewed the region's hospitality trends and environments. Chen, Jang, & Kim (2007) investigated the effect of the SARS epidemic on Taiwanese hotel stock price movements. These existing findings could not be generalized to the entire hotel sector for these events investigated in studies are limited to local areas, and do not show a detailed account regarding the different impact on various types of hotels. So, it is uncertain whether the findings from the previous study may be directly applied to the current hotel and casino hotel financial performances, as the latest recession has been longer, more severe and wider in its impact than previous recessions.

#### *Hotels vs. Casino Hotels*

The casino hotel also has many characteristics that differ from hotels. For example, the products and market segments of the casino hotel industry are unique; it is labor and asset intensive, and the industry is rapidly expanding and is highly leveraged. In addition, there has been a recent trend toward consolidation and expansion, leading to larger firms. Casinos do not carry much inventory that is mostly perishable foods, and gaming companies carry practically no receivables because gaming is generally a cash business (Mills & Yamamura, 1998).

The different characteristics of hotel and casino hotel have been documented in the existing literature (Jang & Yu, 2002; Ryu & Jang, 2004; Van Hoof, Vallen, & McDonald, 1996). Van Hoof, Vallen, and McDonald (1996) identified unique nature of casino hotel with regarding to market segments, marketing strategies, major sources of income, and business profitability. This founding is the basis for selecting these two types of hotels as the objectives in this work.

The two studies that are directly comparable to this study are Jang and Yu (2002), and Ryu and Jang (2004), which revealed the different financial performance of hotels and casino hotels. Jang and Yu (2002) examined select important investment variables for investing the two types of hotels in the United States from 1994 to 1998 using the data of the Value Line Data File. They suggested that the type or the size of hotel is not a factor affecting return on hotel investment, and that casino hotels show higher effectiveness in using assets to generate revenue. Yet, the limited variables chosen is a major drawback of the study, which may need further study on explaining whether or how the different returns exist between these types of hotels and the overall market.

Ryu and Jang (2004) attempted to examine the performance of commercial hotel and casino hotels by using cash flow ratios and traditional financial ratios. Liquidity, solvency, and operational efficiency indicators measured the performance of two types hotels. The findings revealed that dislike hotel, casino hotel have been in better liquidity, solvency, and profitability condition than commercial hotel. Contract to Jang and Yu's findings, theirs indicated a possibility that the different financial performance would result from the type of hotel.

The aforementioned studies did not reach a consistent conclusion on the performance of different types of hotels (hotels and casino hotels); in addition, they did not consider comparative analysis for the cross-industry (hotels and overall market). To fill this gap and help investors make informed decision, this research concentrated on comparing the performance of hotels, casino hotels, and the overall market during the different periods (before, during, and after the recent recession).

#### *Methods of Investment Returns*

Given that lodging sector playing an important role in hospitality industry, decades of studies concentrate on measuring the different economic and social variables



that can affect the development of lodging sector. However, little attention has been paid to the investment returns of different types of hotel properties, in particularly casino hotel and hotel sectors during the recent recession.

Many hotel investment decisions that aim to design an asset allocation strategy and select the specific set of securities to form portfolios are difficult to be made, when investors managing their portfolios, especially during economic downturns. Information on the investment returns of different types of hotels in the different economic conditions enables a better comparison to be made among investments exhibiting potential market risk. On the other hand, in order to make a more effective portfolio allocation decisions, investors and practitioners must take into account the unique investment characteristics of the hotel industry, such as high volatility, unstable cash flows, low risk-adjusted returns, and low institutional support (Contractor & Kundu, 1998; Newell & Seabrook, 2006). Thus, to avoid misallocation of capital when making investment decision, in particular, during the period of recession, it is necessary to know the reliable and sufficient financial performance on different types of hotels.

To get reliable and reasoned information, computing average investment returns for a certain time does not mean the task is done. Risk adjusted returns need to be taken into consideration before investment returns can be compared meaningfully. The simplest and most popular way to adjust returns for investment risk is to compare rates of return with those of other investment funds with similar risk (Bodie, Kane, & Marcus, 2005). But, such comparison can be misleading for the difficulty of accurate definition.

Some commonly used risk-adjusted performance measures are Treynor's measure, Sharpe's measure, and Jensen's measure (portfolio alpha) (Bodie, Kane, and Marcus, 2005). All these three risk-adjusted measures are based the assumption that on Capital Asset Pricing Model (CAPM), which states that the expected return on a portfolio is equal

to the risk-free rate of return plus the product of beta and the difference between market risk premium and risk-free rate of return.

Treynor (1965) developed the first composite measure of portfolio performance that included risk. Building on developments in capital market theory, he introduced a risk-free asset that could be combined with different portfolios to form a straight portfolio to form a straight portfolio possibility line. Followed his earlier work on the capital asset pricing model (CAPM), Sharp (1966, 1994) conceived of a composite measure to evaluate the investment performance, dealing specifically with the capital market line (CML). His measure is similar to the Treynor measure; however, it focuses on measuring the total risk of the portfolio by including the standard deviation of returns rather than considering only the systematic risk (measured by beta) employed by Treynor measure. A disadvantage of the Treynor and Sharpe measures is that they are ratios of return to risk. That is, they produce relative, but not absolute, rankings of portfolio performance (Reilly & Brown, 2006).

Another index widely used to measure the risk-adjusted performance of the portfolio is Jensen measure (Kim, Mattila, & Gu, 2002). The Jensen measure (1968) is similar to the above two measures because it is also based on the CAPM. However, Jensen measure reflects relative performance of portfolio, and only Jensen measure evaluates the over- and under-performance of a portfolio in relative to the stock market (Han and Liang, 1995). In addition, Jensen's alpha is able to determine whether the return of a portfolio is statistically different from that of the stock market (Asbere, Kleiman, and McGowan, 1991).

There are another advantages over the Treynor and Sharpe measures, which make Jensen's alpha measure more suitable for this study. First, it is easier to interpret, in that an alpha value 0.02, for example, indicates that this kind of portfolio generated a return of

2 percent per period more than what was expected given the portfolio's risk level. Second, because it is estimated from a regression equation, it is possible to make statements about the statistical significance of the investment performance, or the difference in performance between two portfolios.

Jensen's performance measure has been used by the studies of portfolio performance evaluation in many fields. Using Jensen's measure, Cumby and Glen (1990) measured the international mutual funds, and found that most of the international mutual funds outperformed the domestic benchmark portfolio, but did not outperform the world market index. Dhar (2013) evaluated the investment management in terms of selectivity skills of managers, revealing that based on both unconditional and conditional Jensen models only some of the fund managers (around twenty five percent) possess superior selectivity skills. Furthermore, Jensen's measure also has been employed in hospitality financial studies. Kim, Mattila and Gu (2002) conducted a comparative analysis of Jensen's alphas to estimate performance of hotel real estate investment trusts. Hsu and Jang (2007) used Jensen Measure Model to examine long-term market of performance in the lodging industry between 1985 and 2000.

Given the purpose of this study, Jensen measure was chose to measure the rate of return of hotels, casino hotels, and S&P 500 index, and determine how the recent recession affected the performance of hotels and casino hotels.

The Jensen measure can be calculated as (Bodie, Kane & Marcus, 2005):

$$\alpha_i = r_i - [r_f + \beta_i (r_m - r_f)] \quad (1)$$

Where:

$r_i$  is the return of stock  $i$ ;

$r_f$  is the risk-free rate of return;

$\beta_i$  is beta or systematic risk of stock  $i$ ; and

$r_m$  is the return of market portfolio.

Equation (3) can be transformed to linear equation:

$$(r_i - r_f) = \alpha_i + \beta_i (r_m - r_f) \quad (2)$$

In other words, Jensen's alpha of a stock is the constant of the linear equation and can be estimated by regressing the difference between the return of the stock and risk-free rate of return against the product of beta and the difference between return of market portfolio and risk-free rate of return.

### **Data and Methods**

This study used weekly S&P 500 index and weekly closing price of publicly traded hotel companies and casino hotel companies from January 2006 to December 2011 to examine and compare the performance of hotels, casino hotels, and overall hotels before, during, and after the recent recession, which consists of time periods of before, during, and after the recession. January 2006 to November 2007 is considered before the recession; December 2007 to June 2009 is considered during the recession (The National Bureau of Economic Research, 2012); and July 2009 to December 2011 is considered after the recession. In addition to these three time periods, this study examined the performance of hotels and casino hotels through the entire data. In other words, this study analyzed the Jensen measures of lodging stocks in four different timeframes.

Hotel and casino hotel properties to be examined were identified through North American Industry Classification System (NAICS) codes 721110 (hotels and motels) and 721120 (casino hotels), a total of 22 publicly traded hotel firms that are identified by Mergent Online database (see Appendix A). Each of the hotels, casino hotels, and overall hotels categories were compared with each other and with S&P 500 index. Weekly rate of return of each property, which is the percentage change in stock price, was obtained from

Mergent Online. The weekly return of S&P 500 was obtained from Center for Research in Security Prices (CRSP), and used as a proxy of the market portfolio.

Return of a stock, risk-free rate of return, beta of a stock, and return of the market portfolio are needed for estimating the Jensen's alpha for each property. Beta, the measure of a stock's systematic risk, is calculated using the weekly return of the stock and S&P500. Using the weekly return of 7-day U.S. Treasury bill as risk-free rate of return, Jensen measure is estimated using Equation (2). If the Jensen's alpha is significant and above zero, it suggests that the property performs better than the market; if the Jensen's alpha is significant and below zero, it suggests that the property performs below the market; and if the Jensen's alpha is not significantly different from zero, it suggests the property performs the same as the market.

In addition, to examining whether hotels performed differently through and after the recent recession and measuring the magnitudes of differences, this study performed two one-way ANOVA to examine how average Alphas differ in three time periods within each category. In other words, the first comparison was among hotels before the recession, during the recession, and after the recession; the second was among casino hotels before, during, and after the recession. Moreover, Tukey's test was conducted to examine the differences among the categories. Then, four independent sample I-tests were performed to examine whether Jensen's alpha was statistically significantly different from zero. The four *t*-tests between categories were performed for time periods of before, during, after the recession, and overall. Microsoft Excel was used to estimate beta of stocks and Jensen's alpha; and SAS software package was used to perform *t*-tests and ANOVA analyses.

## Data Analysis and Results

To test whether two kinds of hotels performed better than the whole market through the recession and their stock system's risks were significantly affected by this event, Jensen's measure was performed on each property through four different time periods to identify the Jensen's alpha and the value of  $\beta_i$ , which was system's risk of property stock. Jensen's alpha was estimated by the intercept in the regression model of Jensen's measure. It is deemed the evidence reveals better performance compared with the whole market when Jensen's alpha is positive for the risk-adjusted return is higher than that of the market portfolio; conversely, regarding underperforming, when Jensen's alpha is negative. Then, after Jensen's alpha and the value of  $\beta_i$  for each property were identified and examined, two one-way ANOVA were conducted to further test whether the mean risk-adjusted return for each kind of hotel differed among four time periods. In addition, to gain better understanding of the differences among various time through the recession, Tukey multiple comparison was conducted in this study, which is considered a commonly used measure regarding comparing two groups' means regardless of the equality of group sizes. Finally, two independent *t*-tests were employed to compare the difference between these two hotel sections through the recent recession.

### *Jensen measure conducted*

Based on the procedure of traditional Jensen measure (1968), a linear regression model (shown in Equation 2) was used for each of the property within each category in the different periods. Then, Jensen's alpha and the value of  $\beta_i$  for each property were calculated to test whether the risk-adjusted return out-performed than the whole market portfolio during the same period. The percentage change in stock price of each property was calculated as weekly rate of return of each property, which was obtained from Mergent Online database, and weekly return of 7-day U.S. Treasury bill and weekly

return of S&P 500 were used as risk-free rate of return and as a proxy of the market portfolio, respectively. Following the definition of the National Bureau of Economic Research (2010), the recession is from December 2007 to June 2009. In this study, the data in the period of pre-recession was collected from January 2006 to November 2007, including 100 weeks; the period of recession from December 2007 to June 2009, including 83 weeks; post-recession from July 2009 to December 2011, including 130 weeks. Table 4.1 and 4.2 reveal the results of Jensen's alpha and the value of  $\beta_i$  for casino hotel section and hotel section through the four different periods.

#### *Comparative analyses on different period conditions*

Two one-way ANOVA analyses for two kinds of hotel sections were employed to check whether there were differences on risk-adjusted performance of individual hotel section through the recession. Within each of category, a one-way ANOVA analysis was used to identify possible significant influence of the recession. In other words, ANOVA was employed to compare the effect of mean Jensen's alphas of each kind of hotel section (casino hotel section and hotel section) in the durations of before, during, and after the recession conditions, and in the overall condition. There was a significant effect for risk-adjusted performance of casino hotel section,  $F(3, 28) = 30.27, p < .001$ , at the  $p < .05$  level for the four conditions, indicating that the risk-adjusted performance of the casino hotel section was significantly different from each period of recession. Moreover, a one-way analysis of variance also yielded a significant effect on risk-adjusted performance of hotel section,  $F(3, 52) = 70.77, p < .001$ , indicating that Jensen alpha of hotel section was significantly different through this exogenous event. So, results of ANOVA rejected the null hypotheses that the mean Jensen alphas in both kinds of hotel had equal values through the recent recession.

Table 4.1. Performance of casino hotel section using Jensen's measure through different periods.

Properties	Before		During		After		Overall	
	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$
ASCA	-0.05207	-0.18245	-0.02017	0.13556	-0.00198	-0.19439	-0.02916	0.16651
DDE	-0.07829	-0.63510	-0.02718	-0.09722	-0.00820	0.00574	-0.03933	-0.01644
ISLE	-0.05635	-0.14545	-0.02079	0.01208	-0.01041	-0.25459	-0.02267	0.18034
LVS	-0.05568	-0.42492	-0.04739	0.52814	-0.01074	-0.36331	-0.03933	0.22039
MCRI	-0.05335	-0.18372	-0.03529	-0.16817	0.00080	-0.25928	-0.04114	-0.06517
MGM	-0.03641	0.03194	-0.05872	-0.25808	0.00106	-0.42597	-0.0257	0.02710
PNK	-0.06259	-0.37827	-0.02641	0.17526	-0.00158	-0.22137	-0.0182	0.27274
WYNN	-0.04001	-0.04780	-0.03442	-0.20486	0.00696	-0.36329	-0.0401	-0.15720

Note. Property selected in each row was based on North American Industry Classification System (NAICS) 721120 (casino hotels), and 9 properties were employed in this study;  $\alpha_{i,t}$  = the Jensen alpha on the  $i$ th property at time  $t$ ;  $\beta_i$  = the bête or systematic risk of the  $i$ th property.

Table 4.2. Performance of hotel section using Jensen's measure through different periods

Properties	Before		During		After		Overall	
	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$	$\alpha_{i,t}$	$\beta_i$
CHH	-0.05099	-0.05031	-0.01341	0.09083	0.00186	-0.06917	-0.02643	0.21970
GET	-0.05534	-0.18919	-0.0317	0.09130	0.00322	-0.42619	-0.03921	0.06280
HOT	-0.06502	-0.37584	-0.01914	0.30253	0.00469	-0.27575	-0.02928	0.27016
IHT	-0.03271	0.32918	-0.01338	0.09161	0.00203	-0.37470	-0.02519	0.23976
ITT	-0.06429	-0.26318	-0.01473	0.04461	-0.00925	0.01114	-0.03038	0.17185
LGN	-0.06907	-0.52276	-0.05677	-0.53467	0.02183	-1.70463	-0.06106	-0.45713
MAR	-0.04843	0.16290	-0.01697	0.09066	0.00137	-0.26723	-0.03154	0.23724
MCS	-0.06329	-0.30726	-0.01809	0.07617	-0.00016	-0.13086	-0.03048	0.16921
RLH	-0.06765	-0.43086	-0.01354	0.24808	0.00020	0.04802	-0.02426	0.31208
SHO	-0.06219	-0.32296	-0.03212	0.17256	0.00090	-0.18977	-0.03904	0.11390
SPPR	-0.04065	0.16594	-0.02198	0.41652	-0.00541	-0.0622	-0.02671	0.40598
WHGG	-0.04326	0.481976	-0.00590	0.20060	-0.0074	0.23647	-0.02357	0.48809
WOLF	-0.06407	-0.40615	-0.03233	0.43771	-0.00060	0.03225	-0.03330	0.31362
WYN	-0.04980	-0.12719	-0.02897	-0.05219	0.01046	-0.36356	-0.03663	-0.02153

Note. Property selected in each row was based on North American Industry Classification System (NAICS) 721110 (hotels and motels), and 14 properties were employed in this study;  $\alpha_{i,t}$  is the Jensen alpha on the  $i$ th property at time  $t$ ;  $\beta_i$  is the bête or systematic risk of the  $i$ th property.



One of the objectives of this research was to gain a better understanding of how the performance of hotels differed during the various periods of the recession. In this sense, Tukey test was conducted for each hotel section subsequently. Post hoc comparisons using the Tukey HSD test indicated that the mean score of Jensen alpha of casino hotel section in the time of after the recession ( $M = -0.0030$ ,  $SD = 0.0062$ ) was statistically significantly higher than it in the other three conditions at the 0.05 level, including before the recession ( $M = -0.0543$ ,  $SD = 0.0130$ ), during the recession ( $M = -0.0338$ ,  $SD = 0.0134$ ), and the overall casino hotel ( $M = -0.0320$ ,  $SD = 0.0091$ ). For the hotel section, A Tukey post hoc test revealed that the Jensen alpha to hotel section was statistically significantly higher after the recession ( $M = 0.0017$ ,  $SD = 0.0076$ ) than it in the other three conditions, including before the recession ( $M = -0.0555$ ,  $SD = 0.0113$ ), during the recession ( $M = -0.0228$ ,  $SD = 0.0034$ ), and the overall hotel ( $M = -0.0327$ ,  $SD = 0.0097$ ). The results from the Tukey tests are shown in Table 4.3 and 4.4. According to the  $p$  value, there were statistically significant effect on the mean Jensen alphas of casino hotel among the different periods of the recession, that is, before, during, and after the recession, but the comparison of the overall condition with the condition of during the recession was non-significant. Then, the results of hotel section using Tukey test displayed in the same way that the effect of all mean Jensen alphas were significant, except the comparison of overall and during the recession conditions. Taken together, these results suggest that no matter of hotel or casino hotel sections, the mean Jensen alphas of various periods all differed from each other, except the two groups: overall vs. during the recession.

Table 4.3. Estimated differences in Jensen's alphas for various periods (before, during, and after the recession) for the casino hotel category using the Tukey method

Periods	Mean difference	95%CI	
		LL	UL
$\mu_2-\mu_1^*$	0.02055	0.00573	0.03536
$\mu_3-\mu_1^*$	0.05133	0.03652	0.06615
$\mu_3-\mu_2^*$	0.03079	0.01597	0.04560
$\mu_4-\mu_1^*$	0.02237	0.00755	0.03718
$\mu_4-\mu_2$	0.00182	-0.01299	0.01663
$\mu_4-\mu_3^*$	-0.02897	-0.04378	-0.01415

Note. CI=confidence interval; LL=lower limit, UL=upper limit;  $\mu_1$ =mean Jensen alpha of casino hotel session before the recession,  $\mu_2$ =mean Jensen alpha of casino hotel session during the recession,  $\mu_3$ =mean Jensen alpha of casino hotel session after the recession;  $\mu_4$ =mean Jensen alpha of casino hotel overall; "\*" indicates  $p<0.05$ .

Table 4.4. Estimated differences in Jensen's alphas for various periods (Before, during, and after the recession) for the hotel category using the Tukey method

Periods	Mean difference	95%CI	
		LL	UL
$\mu_2-\mu_1^*$	<b>0.03270</b>	<b>0.02212</b>	<b>0.04327</b>
$\mu_3-\mu_1^*$	<b>0.05718</b>	<b>0.04661</b>	<b>0.06775</b>
$\mu_3-\mu_2^*$	<b>0.02448</b>	<b>0.01391</b>	<b>0.03505</b>
$\mu_4-\mu_1^*$	<b>0.02283</b>	<b>0.01226</b>	<b>0.03341</b>
$\mu_4-\mu_2$	<b>-0.00986</b>	<b>-0.02043</b>	<b>0.00000</b>
$\mu_4-\mu_3^*$	<b>-0.03434</b>	<b>-0.04492</b>	<b>-0.02377</b>

Note. CI=confidence interval; LL=lower limit, UL=upper limit;  $\mu_1$ =mean Jensen alpha of hotel session before the recession,  $\mu_2$ =mean Jensen alpha of hotel session during the recession,  $\mu_3$ =mean Jensen alpha of hotel session after the recession;  $\mu_4$ =mean Jensen alpha of hotel session as a whole; "\*" indicates  $p<0.05$ .

The results of Tukey tests provide investors with insights on the performance of casino hotels and hotels in the different recession periods. To understand whether the performance of different types of hotel differed before, during, and after recession, and overall, four independent-samples  $t$ -tests were conducted to compare four period performances in casino hotel condition and hotel condition. As shown in Table 4.5, the results indicated a marginally significant outperformance for the casino hotel (M=-0.05434, SD=0.01299) over hotels (M=-0.05548, SD=0.01134),  $p=0.08391$  in the

Table 4.5. Results of independent *t*-tests on comparing casino hotel and hotel categories through various periods

Periods	Casino Hotel (n=8)		Hotel (n=14)		<i>p</i>
	M	SD	M	SD	
Before	-0.05434	0.01299	-0.05548	0.01134	0.08391
During	-0.03380	0.01343	-0.02279	0.01281	0.08075
After	-0.00301	0.00627	0.00170	0.00764	0.13641
Overall	-0.03198	0.00910	-0.03265	0.00966	0.87625

duration of before the recession; on the other hand, during the recession, the results revealed a marginally significant outperformance for hotels ( $M=0.02279$ ,  $SD=0.01281$ ) over casino hotels ( $M=-0.03380$ ,  $SD=0.01343$ ),  $p=0.08075$ . However, the results of after recession period and overall showed non-significant trending in the predicted direction indicating a better or worse performance for hotels ( $M=0.00170$ ,  $SD=0.00764$ ;  $M=-0.03265$ ,  $SD=0.00764$ ) over casino hotels ( $M=-0.00301$ ,  $SD=0.00627$ ;  $M=-0.03198$ ,  $SD=0.00910$ ),  $p=0.13641$ , and  $p=0.87625$ , respectively.

### Discussion and Implications

The purpose of this study was to examine and compare the performance of different types of lodging stocks, casino hotel sector and hotel sector, under different economic conditions using risk-free performance measures, particularly during economic downturns. Descriptive statistics of Jensen alphas and system risks are shown in Table 4.1 and 4.2 to examine the financial characteristics of the weekly returns of casino hotels and hotels. As a whole, the period of during recession seemed to present high risk-adjusted performance with low market risk than the market portfolio for both casino hotels and hotels. The analysis revealed that investors would purchase high return while taking the related low market risk if they locate capital in hotel stock during the recession. This

founding would offer another proof that hotel investment was a relatively safe investment vehicle offering long-term hedging against inflation (Kim et al., 2002).

In order to make more informed decision, it is important to further study the specific performance changes during the different economic conditions. The better comparisons on market risk and on the return for different lodging sectors enable to help investors and practitioners keep caution on investment exhibiting various risks. According to one-way ANOVA analysis, there was a significant effect for risk-adjusted performance of casino hotel section indicating that the risk-adjusted performance of casino hotel section was significantly different from each period of recession. Moreover, a one-way analysis of variance also yielded a significant effect on risk-adjusted performance of hotel section suggesting that Jensen alpha of hotel section was significantly different through this exogenous event. So, results of ANOVA rejected the null hypotheses that the mean Jensen alphas in both kinds of hotel had equal values through the recent recession.

Tukey tests were conducted for each hotel section subsequently in order to win a better understanding of how the performance of hotels differed during the various periods of the recession. The mean score of Jensen alpha of casino hotel section in the time of after the recession was significantly higher than it in the other three conditions (before and during the recession and the overall casino hotel). For the hotel section, a Tukey post hoc test revealed that the Jensen alpha to hotel section after the recession was significantly higher than it in the other three conditions. According to the p value, there were statistically significant effect on the mean Jensen alphas of casino hotel among the three periods of the recession, but the comparison of the overall condition with the condition of during the recession was non-significant. The results of hotel section using the Tukey test displayed in the same way that the effect of all mean Jensen alphas were

significant, except the comparison of overall and during the recession conditions. Taken together, these results suggest that no matter of hotel or casino hotel sections, the mean Jensen alphas of various periods all differed from each other, except the two groups: overall vs. during the recession.

According to the independent *t*-test, a marginally significant outperformance is observed for the casino hotel over hotels in the duration of before the recession. On the other hand, during the recession, the results revealed a marginally significant outperformance for hotels over casino hotels. However, the results of after recession period and overall showed non-significant trending in the predicted direction indicating a better or worse performance for hotels over casino hotels, respectively.

These results were informative for hotel investors on several levels. First, these results demonstrated that the risk-adjusted performances of both casino hotels and hotels outperformed than the overall market performance, which can help investors mitigate risks during the recession, and preserve and increase the stock value in the future. Second, based on the results of Tukey method, it is clearly shown that the United State economy is not expected to rebound fully any time in the near future (Barro, 2012).

Third, the difference between these two types of hotels was marginally significant, which may confute the results of previous studies regarding on the difference between them. These maybe result from a number of reasons. First, there were completely different focus of this study and prior studies, for this article only concentrated on the investment performance between these two kinds of hotels in a unique situation, the recent recession, which limited the behaviors in long-term perspective. Second, this study was limited by the fact that only publicly traded hotel and casino hotel companies were taken into account in this article. Many excellent hotel companies were excluded in this study.

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## CHAPTER 5. SUMMARY

This research study applied Jensen's alpha measure to examine and compare the performance of different types of lodging stocks, casino hotel sector and hotel sector, under different economic conditions, particularly during the economic downturns from 2007 to 2009. Data were collected from 22 properties including hotels and casino hotels through 313 weeks, analyzing the different performance of these two types of hotels. Jensen's alpha measure, ANOVA and independent sample *t* tests were used for analysis. The first finding revealed that, in the period of during recession, both of the two types of hotels seemed to present high risk-adjusted performance with low market risk than the market. These results indicated that investors would purchase high return while taking the related low market risk if they locate capital in hotel stock during the recession. This finding would offer another proof that hotel investment was a relatively safe investment vehicle offering long-term hedging against inflation. The second finding revealed that there were significant effects on risk-adjusted performances for both hotel and casino hotel sections. These results indicated that the risk-adjusted performances of both hotel and casino hotel sections were significantly different from each period of recession. According to the results of independent *t*-test, this study revealed that before the recession casino hotel performed better than the hotel section, but during the recession hotels outperformed over casino hotels.

Each study stands alone on an individual basis and contributes to the extant literature on lodging industry and crisis events. Overall, this study advances the body of knowledge in the lodging study literature by discussing and analyzing the financial performance during the recession.

These results were also informative for hotel investors on several levels. First, these results demonstrated that the risk-adjusted performances of both casino hotels and hotels outperformed than the overall market performance, which can help investors mitigate risks during the recession, and preserve and increase the stock value in the future. Second, based on the results of Tukey method, it is clearly shown that the United State economy is not expected to rebound fully any time in the near future (Barro, 2012).

Third, the difference between these two types of hotels was marginally significant, which may confute the results of previous studies regarding on the difference between them. These maybe result from a number of reasons. First, there were completely different focus of this study and prior studies, for this article only concentrated on the investment performance between these two kinds of hotels in a unique situation, the recent recession, which limited the behaviors in long-term perspective. Second, this study was limited by the fact that only publicly traded hotel and casino hotel companies were taken into account in this article. Many excellent hotel companies were excluded in this study.

The measure of investment performance used in this study was found to be reliable. It measures performance by addressing the risk-adjusted returns and systematic risk compared with the entire market. Future researchers should use a similar method when they attempt to measure the performance of lodging section. It is also recommended that, whenever possible, future researchers would conduct studies that focus on the causes of results found in this study.

**APPENDIX. CASINO HOTEL AND HOTEL FIRMS**

(Identified through Mergent Online database)

721110 hotels and motels		721120 casino hotels	
Choice Hotels International, Inc.	CHH	MGM Resorts International, Inc.	MGM
Ryman Hospitality Properties, Inc.	GET	Pinnacle Entertainment Inc.	PNK
InnSuites Hospitality Trust	IHT	Isle of Capri Casinos	ISLE
ITT Corp	ITT	Monarch Casino & Resort, Inc.	MCRI
Lions Gate Entertainment Corp.	LGN	Ameristar Casinos Inc.	ASCA
Marriott International, Inc.	MAR	Dover Downs Gaming & Entertainment, Inc.	DDE
The Marcus Corporation	MCS	Wynn Resorts, Inc.	WYNN
Red Lion Hotels Corporation	RLH	Las Vegas Sands, Inc.	LVS
Sunstone Hotel Investors, Inc.	SHO		
Supertel Hospitality, Inc.	SPPR		
Great Wolf Resorts, Inc.	WOLF		
Wyndham Worldwide Corporation	WYN		

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