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# Profitability and Return-on-Investment from Casino Amenities\*

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**Abstract:** We empirically analyze the return on investment of different casino resort amenities (e.g., casinos, hotels, restaurants, and other entertainment). We model casino corporation stock prices using regression analysis of cross-sectional time series data. Stock prices are explained by variables that represent firm-level investments in and revenues from different functional areas of the typical casino resort, and two macroeconomic control variables. Results are sensitive to the dependent return variable chosen; and revenue variable results differ from expenditure variable results. This suggests that subsequent research should focus on market-specific analyses, which may help to determine which amenities provide greatest returns in particular markets.

## I. Introduction

Until the recession that began at the end of 2007, many observers had regarded the U.S. casino industry, especially that in Las Vegas, to be recession-proof. This has been proven starkly wrong, as there has been a steady revenue decline in U.S. casinos during 2008 and 2009. Nationwide commercial casino revenues dropped from \$34.1 billion in 2007 to \$32.5 billion in 2008 and \$30.7 billion in 2009. October 2009 revenues were down in Las Vegas for the 22<sup>nd</sup> straight month, declining to their lowest monthly total in the past six years (KXNT 2009). Atlantic City, NJ, saw its 2010 first quarter revenues continue to decline compared to revenues in the first quarter of 2009 (Associated Press 2010). However, some analysts have predicted that the casino market may have bottomed-out in the first half of 2010 (Green 2010). What was once considered to be a stable and ever-growing industry has with the recent recession been shown to

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have just as unstable foundation as most other industries, if not more-so, as the casino industry relies on consumers' discretionary spending.

Expansion of the casino industry occurs only at the pleasure of voters and hosting government jurisdictions. While, on the one hand, governments enjoy the potential tax revenues provided by casinos, on the other hand they have concern over potential social costs and other problems casinos may bring. The uncertainty in the industry that has recently surprised many gaming industry observers is manifest in the extreme volatility in the industry stock prices. One casino stock website explains,

Major companies in the industry go through major stock price adjustments on a regular basis. New laws are passed in different states, or countries which can set stock prices reeling. New casinos or companies open their doors increasing competition. Major investors buy in and bail out throughout the year. For these reasons, and many more, the casino gaming sector is the most volatile in the market. (casinogamingstock.net)

The U.S. casino industry has expanded drastically since the early 1990s. Outside of Nevada and New Jersey, the earliest adopting casino states began with only riverboat casinos. Now in many jurisdictions there are land-based casinos, which tend to be much larger than riverboat facilities. Table 1 illustrates the legalization and opening dates for commercial casinos in the U.S., and for 2007, the number of commercial casinos operating in each state, their total revenues, and the taxes they paid to state governments. As is evident from the table, the casino industry is quite large in the U.S. – it is among the largest entertainment industries. Despite the recession that began in 2007, a variety of states are currently considering the introduction or expansion of commercial casinos. This tendency has increased because of increased fiscal pressures on state governments, among other reasons (Calcagno, Walker, and Jackson 2010). Outside the U.S. casino expansion has been equally impressive. Macau is now the largest commercial gaming market in the world, and other countries such as Singapore have also

**Table 1. Commercial casino market in the U.S., 2007**

State	Year Legalized	Date Casino(s) Opened	# Casinos Operating in 2007	2007 Revenues (millions \$)	2007 Taxes Paid (millions \$)
Colorado	1990	Oct. 1991	45	819	115
Illinois	1990	Sept. 1991	9	1983	834
Indiana	1993	Dec. 1995	11	2625	842
Iowa	1989	Apr. 1991	17	1363	315
Louisiana	1991	Oct. 1993	18	2566	559
Michigan	1996	July 1999	3	1335	366
Mississippi	1990	Aug. 1992	29	2891	350
Missouri	1993	May 1994	12	1592	417
Nevada	1931	1931	270*	12849	1034
New Jersey	1976	1978	11	4921	475
Pennsylvania	2004	Oct. 2007	6	1090	473
S. Dakota	1989	Nov. 1989	36	98	15
<b>Totals</b>	-	-	<b>467</b>	<b>34132</b>	<b>5795</b>

Source: AGA (2008) and Calcagno, Walker, and Jackson (2010).

\* The Nevada casino count includes only casinos with gaming revenues over \$1 million per year.

recently introduced casinos. Casino gambling is now a worldwide tourism/entertainment phenomenon. Analysts' ability to understand the industry fundamentals have been outpaced by the growth and changes in the industry.

Las Vegas has always been the capital of casino gambling in the U.S. Prior to the 1990s, the casino industry had an image characterized by "sin city." The industry was a cornerstone of adult entertainment, and attracted relatively few families. But in the 1990s Las Vegas reinvented itself by diversifying from its traditional model. Steve Wynn is often credited with fundamentally transforming the industry with *The Mirage*. This property represented one of the first that combined casino, hotel, fine dining, and world-class shows. Many casinos that followed also followed the "casino-based destination resort" model, and now the Las Vegas Strip is lined with huge, expensive theme-based casino properties, many of which were family-oriented.<sup>1</sup> Recently there has been a swing back to the more traditional "sin-city" themes for new Vegas casinos, as

<sup>1</sup> The book by Binkley (2008) chronicles the managers that fundamentally changed Las Vegas during the past two decades. For a longer history of Las Vegas, see Schwartz (2003).

indicated in the city-wide advertising slogan, “What happens in Vegas stays in Vegas,” as well as a new trend in adult-only pools at many hotels. Casinos across the country often imitate the trends set in Las Vegas.

An additional characteristic of the casino industry that should be noted is that the industry seems to thrive with some measure of agglomeration. Again Las Vegas seems to show this clearly. With so many different casinos in one location, each casino is able to attract a customer base in part because patrons have other nearby options. This variety makes Las Vegas a particularly attractive market. Similarly, Atlantic City and Biloxi have their own agglomeration which has kept those locations in the top revenue generating casino markets in the U.S. Internationally the same trend can be seen, for example in Macau.

Despite the continuing growth of commercial casinos in Las Vegas, the rest of the U.S., and around the world, there has been one very interesting trend that has accompanied the growth. Until the mid-1990s, certainly the largest portion of casino revenues was derived from casino floor operations. Typically hotel room and restaurant prices were held very low, with the expectation that casino revenues would subsidize the other departments at the casino resort. In some cases, hotel rooms and other amenities were “comped” to the casino’s best customers. In such cases, revenue from the casino is expected to offset expenses associated with comping the best customers. However, beginning in the mid-1990s, a new trend emerged in which casino resorts became focused on offering a well-rounded menu of entertainment options. This has continued, and now other, non-casino functions actually generate more revenues than casino operations at many casino resorts. Indeed, on average more than 50% of casino resort revenues are generated from *non-casino functions*. Many casino resorts now offer world-class entertainment, such as Cirque de Soleil shows. Casino hotel room prices are generally

significantly higher now than they were through the mid-1990s.<sup>2</sup> The same is true of restaurant prices; Las Vegas demonstrates this with its growing and wide array of famous-name, expensive restaurants. In the early 1990s and before, one could get an all-you-can-eat buffet for less than \$10. Now many resorts in Las Vegas offer buffets that cost over \$30 per person. Although one could argue that the quality of the hotels and restaurants has improved, justifying higher prices, still, these non-casino components of casino resorts have become increasingly important to casino industry growth. Indeed, the diversification of amenities at casino resorts seems to be the rule since the mid-1990s.

These developments beg the question: Has the diversification of casino management strategy away from casinos to other sources of revenues had a measurable impact on the value of casino companies? With the expansion of casinos into new jurisdictions, competition at the national level has increased significantly. This competition for customer spending raises the question of what casino amenities are most important to offer casino patrons, and which best fuel profitability. In this paper we attempt to answer these questions through an analysis of casino company returns on assets, as they relate to the volume of business accruing to the departments of the typical destination casino resort: casino hotel, restaurant, and other entertainment. We believe this to be the first study to rigorously analyze this issue.

Our paper is organized into four additional sections. Section II provides background information and a brief literature review. Section III explains the data and our empirical model. In Section IV we discuss the results of the empirical analysis, and we conclude in Section V.

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<sup>2</sup> Recently prices have fallen in many markets due to the recession, but hotel prices in real terms are still much higher, in Las Vegas, for example, than they were a decade ago.

## II. Background

Casino games are inherently profitable, as the casinos do not pay the fair odds on bets won by casino patrons. This is called the “house edge,” and averages less than 5% per dollar bet across all casino games. Casino games are more or less identical across the U.S., in terms of the bets available and the payoffs to the bets. For example, blackjack and craps games are universal. Slot machines, while they may have different themes and some variation in payout ratios, are rather homogeneous.<sup>3</sup> As casinos have expanded within existing markets and spread to new ones, casino operators have adopted new strategies to attract customers. Our goal in this paper is to analyze which strategies appear to be more effective, as measured in the firms’ returns, as revealed by returns on assets and changes in stock values.

There are two possible extreme organizational structures with respect to amenities and their diversification. Specialization would be a casino that focuses only on the casino floor as the primary if not only attraction for customers. There are still some casinos that have this strategy, even in Las Vegas. However, these properties tend to be aimed toward local customers or those who are interested only in gambling and no other types of entertainment. Specialization produces a greater quality and/or variety of more specific products and services, potentially increasing sales (Berger, Demsetz and Strahan 2000). Interestingly, the corporate mergers and acquisitions literature suggests that diversifying acquisitions and ventures are generally value-reducing, and that increases in corporate focus are value-enhancing (Lang and Stulz 1994; Jensen and Ruback 1984; Berger and Ofek 1995; and John and Ofek 1995).

On the other hand, an array of amenities may be more likely to attract a larger customer base to a particular casino resort. Guier (1999) and Lucas and Brewer (2001) advocate the full-

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<sup>3</sup> Different markets have different pay-out rates on slot machine games. Minimum payouts are typically legislated, but most casinos have pay-out rates larger than the minimums allowed (Schwartz 2010).

service casino facilities, which include restaurants and entertainment offerings, as a strategy to optimize property values because these amenities are theorized to influence gaming volume. (A specific example of this diversification is discussed by d’Hautesserre (2000) in the case of the Foxwoods Casino in Connecticut.) By offering these amenities, casinos believe that the operating costs of having such offerings are significantly less than the cash flow they provide to the casino. Yet, since casino games are inherently profitable – the casino’s profit is a result of the laws of probability – other amenities may be relatively risky, in terms of the casino resort’s bottom line. Diversification reduces costs due to economies of scope (Kwan and Laderman 1999). Efficiency, defined as a firm’s ability to utilize its resources in an effective and productive manner, has been found to enhance shareholder value. Efficiency may also be improved if increased diversification improves the risk-return relationship. Thus, the “efficiency hypothesis” states that multiple divisions increase shareholder value by investing in multiple divisions and effectively managing the combination of the amenities more efficiently than they can be managed separately. Thus, it is an empirical question as whether or not the changes seen in the casino company structure – diversification to new amenities – ultimately add value to shareholders.

The basic issue is thus whether the traditional casino company that offers multiple services and products to its customers maximizes its shareholder value. Or does a focused gaming facility that specializes primarily in gaming maximize shareholder value? Or is it something in-between? The rapid expansion of “casino resorts,” rather than casinos alone, suggests that a diversification of amenities is profit-maximizing. The purpose of this project, therefore, is to investigate whether and how various casino structures affect shareholder value, as measured by return on assets and changes in stock values. Due to the uniqueness of the casino gaming industry, examining the industry structure vis-à-vis the amenities offered will provide a



new perspective into diversification benefits. Since the primary amenity offered by the gaming industry is casino gaming, the casinos' market returns will be directly related to the casinos' ability to cross-market its products and services to a diverse customer base. Unlike the general result for industrial firms, we could observe positive wealth effects for casinos resulting from diverse products and services. In addition, the casinos' ability to tailor a variety of new products and services to existing customers would be expected to lead to increased sales and shareholder value. Indeed, this appears to be the path the casino industry has followed, as non-casino revenues are now larger than casino revenues at many destination resort casinos, especially in large casino markets like Las Vegas.

While there has been considerable research on corporate diversification, ours will be the first study of which we are aware to examine the benefits of diversification in the casino industry. Of course, individual firms analyze the effects of diversification, but we are not aware of any study which analyses the U.S. casino industry overall. Using casino gaming as the base organization, we examine the incremental impacts of combining casinos with: (1) hotels, (2) restaurants, (3) retail outlets, (4) entertainment venues and/or (5) environmental exhibits. It is reasonable to believe that there are large differences between casinos only facilities and those that offer all five types of amenities. Our analysis allows for an assessment of whether and how the degree of diversification in the gaming industry influences shareholders' value. The specific questions we address are:

- (1) Are there specific expenditures that have greater returns on investment or increase the value of a particular combination of casino amenities?
- (2) Are there differences in the market values for various combinations of gaming industry amenity combinations?

As an academic exercise, this study makes a contribution to the literature by analyzing what may be one of the most volatile tourism sectors. As for being a practical application, the study provides information to casino management, by explaining what the available data show as to which departments of the casino are relatively profitable and translate into high corporate value. The analysis can also be useful to investors in analyzing which casino companies are likely to show success in the future, based on their past performance and how the firms' investments are allocated across casino department function.

### **III. Data and models**

We wish to test how casino company returns data are affected by the expenditures and revenues associated with the casino property amenities listed above. There are several ways to measure firm-level performance. These include return on investment, defined as net income divided by common stock and preferred stock equity plus long-term debt; return on assets, or income for the period divided by assets; period return, or changes in stock prices; and market capital. Our empirical analysis tests the marginal impacts of different casino amenity revenues and expenditures on two of these performance measures: return on assets (ROA) and period return (i.e., changes in stock price).

#### ***Data***

We collected firm-specific data for publicly traded companies with casinos as their primary business. Our data source for the casino company stock and financial data is SNL Financial Interactive. There are 24 gaming firms included in the data set. The data are limited,

running from the first quarter of 2004 (2004.1) through the third quarter of 2009 (2009.3). Table 2 lists the firms included in the analysis, their state of incorporation, and web address.

**Table 2. Casino firms and states of incorporation**

<b>Company Name</b>	<b>State of Inc.</b>	<b>Web Address</b>
American Wagering, Inc.	NV	<a href="http://www.americanwagering.com">www.americanwagering.com</a>
Ameristar Casinos, Inc.	NV	<a href="http://www.ameristar.com">www.ameristar.com</a>
Archon Corporation	NV	
Aztar Corporation	DE	<a href="http://www.aztar.com">www.aztar.com</a>
Boyd Gaming Corporation	NV	<a href="http://www.boydgaming.com">www.boydgaming.com</a>
Century Casinos, Inc.	DE	<a href="http://www.centurycasinos.com">www.centurycasinos.com</a>
Global Casinos, Inc.	UT	
Harrah's Entertainment, Inc.	DE	<a href="http://www.harrahs.com">www.harrahs.com</a>
Isle of Capri Casinos, Inc.	DE	<a href="http://www.islecorp.com">www.islecorp.com</a>
Kerzner International Limited		<a href="http://www.kerzner.com">www.kerzner.com</a>
Las Vegas Sands Corp.	NV	<a href="http://www.lasvegassands.com">www.lasvegassands.com</a>
MGM Mirage	DE	<a href="http://www.mgmmirage.com">www.mgmmirage.com</a>
Monarch Casino & Resort, Inc.	NV	<a href="http://www.monarchcasino.com">www.monarchcasino.com</a>
MTR Gaming Group, Inc.	DE	<a href="http://www.mtrgaming.com">www.mtrgaming.com</a>
Nevada Gold & Casinos, Inc.	NV	<a href="http://www.nevadagold.com">www.nevadagold.com</a>
North American Gaming & Entertainment Corporation	DE	
Penn National Gaming, Inc.	PA	<a href="http://www.pngaming.com">www.pngaming.com</a>
Pinnacle Entertainment, Inc.	DE	<a href="http://www.pnkinc.com">www.pnkinc.com</a>
Riviera Holdings Corporation	NV	<a href="http://www.rivierahotel.com">www.rivierahotel.com</a>
Sands Regent	NV	<a href="http://www.sandsregency.com">www.sandsregency.com</a>
Station Casinos, Inc.	NV	<a href="http://www.stationcasinos.com">www.stationcasinos.com</a>
Trans World Corporation	NV	<a href="http://www.transwc.com">www.transwc.com</a>
Trump Entertainment Resorts, Inc.	DE	<a href="http://www.trumpcasinos.com">www.trumpcasinos.com</a>
Wynn Resorts, Limited	NV	<a href="http://www.wynnresorts.com">www.wynnresorts.com</a>

Although many of the companies included in our analysis were in business prior to 2004.1, those earlier data contain too many zero observations to be useful. One advantage of using the 2004.1-2009.3 sample period is that few new casino markets were developed during this time frame. Therefore, what expansion did occur in the casino industry did so in existing states/markets. This is helpful because it is one less factor that must be accounted for in our model. The data we collected for each company include:

- the identities of the firms involved in the gaming industry
- the state headquarters
- the number of facilities operated
- the various amenities offered by facility
- the primary four digit SIC codes
- the number of SIC codes in which the gaming firms participate
- revenue and expenditure data by casino resort department function

The primary financial variables are listed and defined in Table 3. In Table 4 we report the annual mean values for these variables. (Our model uses quarterly data, but we show annual data in the table for brevity.)<sup>4</sup>

There are three components to Table 4. Panel A lists the revenue sources for the casino firms. *Direct Gaming* is revenue from the casino floor. The hotel operations, food/beverage, and interest income variables are self-explanatory. *Other Gaming* refers to any revenues earned by the casino property not classified elsewhere in Table 4. *Partnership income* counts any revenues from unconsolidated partnerships or joint ventures.

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<sup>4</sup> All casino company financial data were provided by SNL Financial Interactive.

**Table 3. Firm-level variables\***

<b>Variable</b>	<b>Description</b>
<b>Revenues</b>	
Direct gaming	revenue earned from customer losses, net of house losses, at games of chance and from wager-book activities
Hotel operation	revenues earned from the day-to-day room and service operations of hotel properties
Food and beverage	revenues earned from the sale of food and beverage services
Other gaming	revenues not otherwise classified above that were earned in the operations of hotel, resort, and casino gaming properties, including businesses performed in conjunction with or otherwise directly related to the operation of those properties
Interest	interest earned on loans and leases, and dividends earned in investment securities, plus any deferred loan fees amortized into income during the period (For companies under US-GAAP this is computed in accordance with FAS 91.)
Partnership	net income from unconsolidated partnerships and joint ventures
<b>Expenses</b>	
Direct gaming	expenses incurred in operations of games of chance and wager-book activities. (Does not include house gaming losses, which are included in net gaming revenue.)
Hotel operation	expense incurred from the day-to-day room and service operations of hotel properties
Food and beverage	expenses incurred from the sale of food and beverage services
Other gaming	expenses incurred from the operations of hotel, resort, and casino gaming properties, including businesses performed in conjunction with or otherwise directly related to the operation of those properties
Interest	interest on debt and other borrowings, on an incurred basis; includes the amortization of discount or premiums and interest on capital leases
Pre-opening and start-up	expenses incurred in the development of assets not yet producing revenue
Other operating	operating expenses not otherwise classified above
Restructuring and merger	expenses incurred as the result of restructuring, mergers, and acquisitions

\* Provided by SNL Financial Interactive

**Table 4. Summary statistics**

<b>Panel A: Revenue variables</b>	<b>Year</b>					
<i>(in millions \$)</i>	2004	2005	2006	2007	2008	2009
Total	245,725	324,279	394,595	434,441	335,992	401,301
Direct gaming	187,780	225,471	286,901	319,452	248,772	288,988
Hotel operation	29,643	46,779	59,607	65,081	53,846	54,932
Food and beverage	43,459	54,815	69,587	74,884	57,689	64,480
Other gaming	21,811	29,016	34,764	37,297	34,144	37,589
Interest	400	1,361	2,532	2,804	1,206	692
Partnership	3,259	3,994	4,842	3,950	1,342	(2,030)
Total capital	1,479,887	2,389,877	2,864,506	3,262,477	2,936,808	3,572,828
<b>Panel B: Expense variables</b>	<b>Year</b>					
<i>(in millions \$)</i>	2004	2005	2006	2007	2008	2009
Total	218,787	294,767	345,710	380,700	362,504	399,234
Direct gaming	89,785	107,433	136,489	156,841	132,860	152,606
Hotel operation	8,743	12,956	15,598	16,073	14,341	14,947
Food and beverage	22,960	31,556	37,073	38,671	31,860	34,125
Other gaming	196,363	262,966	311,488	347,422	298,717	365,680
Interest	19,221	25,267	31,016	32,692	26,734	45,656
Pre-opening and start-up	1,153	2,118	3,288	5,666	4,850	3,408
Other operating	15,806	20,256	20,453	21,004	24,676	24,115
Restructuring	927	(1,152)	897	115	(2,682)	582
Total assets	1,808,521	2,958,407	3,524,323	3,990,545	3,563,254	4,310,712
Total debt	1,022,199	1,617,072	2,010,253	2,293,982	2,148,420	2,640,104
<b>Panel C: Profitability variables</b>	<b>Year</b>					
<i>(in millions \$, except where noted)</i>	2004	2005	2006	2007	2008	2009
Price per share ( <i>in \$</i> )	20.29	29.15	33.42	37.54	16.28	8.83
Market capital	1,701,471	2,940,845	3,745,987	5,401,150	2,147,914	1,098,941
Period return	32.8%	2.9%	6.9%	1.9%	-25.9%	26.8%
Return on assets	134.2%	89.5%	102.6%	33.1%	1.7%	-53.1%
Return on investment	12.3%	10.0%	14.1%	14.1%	-7.3%	0.5%

Table 4 Panel B shows the expenditure classifications for the casino companies. Many are the same as for Panel A. *Preopening and start-up* refers to expenditures related to properties yet to earn revenue. *Other operating* expenses include any expenses that are not otherwise classified in Table 4 Panel B. The final expenditure category is *Restructuring*, which relates to

the fairly common phenomenon of changes (mergers, etc.) to the industry's market structure. Overall, such restructuring expenditures are relatively small.

Panel C of Table 4 lists measures of firm performance.<sup>5</sup> We choose two of these measures – return on assets and stock share price – to use as the dependent variables in our models because these variables yielded the most notable results.

As shown in Table 4, there is a considerable variation in the key variables for the firms over time. For example, average total revenue consistently increases from approximately \$245 million in 2004 to a high of \$434 million in 2007. The recent recession has caused revenues to fall somewhat in 2008 and 2009. The total expenses increase from approximately \$218 million in 2004 to almost \$400 million in 2009. This long-term increase in both revenue and expenses suggest that casinos were investing in growth and receiving financial rewards from that investment. The recession that began in late 2007, however, has certainly affected the industry.

The sizes of casinos have varied dramatically over the course of our sample period. In 2004 the market capital was \$1.7 billion, and it rose to a high of \$5.4 billion in 2007. Table 4 shows that this was followed by a steep drop in market capitalization resulting in a market capitalization just of \$1.9 billion. Table 3 shows that the evolution of the casino long-run performance mimics the overall macroeconomic conditions in the United States and the broad stock market trends; this is not surprising.

### ***Model***

The estimated performance measures vary over the cross-sections of casino companies and over time. In order to examine the impact of functional diversification on casino return measures, we exploit the panel structure of the data. We estimate variations on the following

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<sup>5</sup> Readers unfamiliar with these return variables can consult a finance textbook for more a detailed explanation.

models, one set with revenues as dependent variables (equation 1), and the other with expenditure variables (equation 2):

$$\begin{aligned} \text{Market Return}_{it} = & \beta_1 + \beta_2 \text{DirectGamingRevenue}_{i,t} + \beta_3 \text{HotelOperationRevenue}_{i,t} + \\ & \beta_4 \text{Food\&BeverageRevenue}_{i,t} + \beta_5 \text{OtherGamingRevenue}_{i,t} + \\ & \beta_6 \text{InterestIncomeRevenue}_{i,t} + \beta_7 \text{PartnershipIncome}_{i,t} + \beta_8 \text{RealGDP}_t + \\ & \beta_9 \text{Unemployment}_t + \varepsilon_{i,t} \end{aligned} \quad (1)$$

$$\begin{aligned} \text{Market Return}_{it} = & \gamma_1 + \gamma_2 \text{DirectGamingExpense}_{i,t} + \gamma_3 \text{HotelOperatingExpense}_{i,t} + \\ & \gamma_4 \text{Food\&BeverageExpense}_{i,t} + \gamma_5 \text{OtherGamingExpense}_{i,t} + \\ & \gamma_6 \text{InterestExpense}_{i,t} + \gamma_7 \text{PreOpeningExpense}_{i,t} + \\ & \gamma_8 \text{OtherOperatingExpense}_{i,t} + \gamma_9 \text{RealGDP}_t + \gamma_{10} \text{Unemployment}_t + \varepsilon_{i,t} \end{aligned} \quad (2)$$

In the equations  $\text{Market Return}_{it}$  is the performance measure for firm  $i$  in quarter  $t$ . As noted above, we test both return on assets and stock share price. Company-level changes in expenditures and revenues from the various amenities, as listed in Table 3, are the explanatory variables in the models ( $\beta_2$  through  $\beta_7$  and  $\gamma_2$  through  $\gamma_8$ ). Also included in all models are two macroeconomic variables: the U.S. inflation-adjusted GDP and the national unemployment rate. The  $\beta_1$  and  $\gamma_1$  are the constant terms, and  $\varepsilon_i$  is the error term.

Regressing the firms' market returns on the various revenue and expenditure categories related to casino amenities allows us to isolate the marginal impact of each type of amenity, at least at the company level. The changes in the expenditures on and revenues from the various amenities are scaled by total expenses or total revenues, respectively, to standardize the contribution of the amenity on the firm's performance.



## IV. Results

We run each of the models (shown in equations 1 and 2) with different combinations of the explanatory variables, as shown in Tables 5 and 6.<sup>6</sup> For the sake of brevity, we discuss the results in groups, based on the general results for each variable across all tested models. We first examine the results for the return on assets variable. These results are shown in Table 5.

First consider the revenue variables tested, the results of which are shown in Panel A. Unsurprisingly, casino revenues have a large, statistically significant positive impact on company value. Similarly, in most models hotel operations also contribute to firm returns, with the exception of the first model (column 1). Food and beverage revenues were also statistically significant, which may reflect the fact that restaurants have become a more significant amenity at casinos during the past decade. The remaining industry variables also show significance and positive impacts. The macroeconomic variables are also significant; GDP has a direct relationship with casino firm returns, which is not surprising. It suggests that casino gambling represents a “normal good.”<sup>7</sup> The statistically significant and positive impact of the unemployment rate (in all models) is surprising. This result suggests that unemployed individuals are more likely to go to casinos, perhaps out of desperation.<sup>8</sup> Overall the revenue results suggest that casinos are still the largest contributor to firm value, while hotel and food/beverage operations both make smaller contributions to firm value.

In Panel B of Table 5, results are shown for the impact of expenditures on amenities on the firms’ return on assets. Oddly, expenditures related to direct gaming have a large and negative impact on casino firm returns. This may suggest that investments and renovations in

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<sup>6</sup> We tested variants on each model. The results presented here provide the most significant results.

<sup>7</sup> In economics, a normal good is one for which demand increases as a person’s income increases.

<sup>8</sup> Recent news reports (e.g., Morrison 2010) indicate that \$4.8 million in welfare program money has been withdrawn from casino ATMs since 2007.

**Table 5. Results: Dependent variable = return-on-assets (ROA)**

<b>Panel A: Revenues</b>					
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Real GDP	0.0003 (2.29)**	0.0002 (1.70)*	0.0002 (1.67)*	0.0002 (1.68)*	0.0003 (2.92)***
Unemployment	0.8456 (4.92)***	0.4168 (2.76)***	0.3126 (2.19)**	0.4748 (3.60)***	0.7785 (5.53)***
Direct gaming revenue	0.1810 (5.74)***	0.1540 (5.55)***	0.1840 (7.92)***	0.1540 (5.52)***	
Hotel operation revenue	0.1267 (1.07)	0.3417 (3.03)***	0.4251 (4.94)***	0.3257 (2.91)***	
Food and beverage revenue	0.05759 (3.67)***	0.2437 (2.06)**		0.2255 (1.92)*	
Other gaming revenue	0.0301 (0.24)			0.0854 (3.29)***	
Interest income revenue	0.3555 (1.85)*				0.8990 (5.41)***
Partnership income	0.3701 (4.57)***				0.4121 (5.43)***
Constant	-49.4597 (5.24)***	-33.2540 (3.92)***	-33.0587 (4.22)***	-34.8978 (4.15)***	-28.2515 (3.61)***
Observations	258	321	369	317	372
Adjusted R-Squared	0.42	0.28	0.23	0.30	0.15
<b>Panel B: Expenses</b>					
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Real GDP	0.0001 (1.02)	0.0002 (1.52)	0.0002 (1.47)	0.0002 (1.69)*	0.0002 (2.16)*
Unemployment	0.4060 (2.38)**	0.4343 (2.60)***	0.3531 (2.39)***	0.3717 (2.49)**	0.3825 (2.99)***
Direct gaming expense	-0.2420 (3.24)***	-0.1140 (1.82)*	-0.0306 (3.60)***		
Hotel operation expense	-1.2434 (2.96)***	-1.3014 (3.22)***	-0.6629 (2.59)***	-0.0508 (1.98)**	
Food and beverage expense	0.0606 (0.28)	0.1923 (0.89)			
Other gaming expense	0.1554 (3.02)***				
Interest expense	-0.1513 (1.82)*		-0.0008 (0.01)	-0.1298 (2.24)**	-0.1660 (3.30)***
Pre-opening and start-up expense	-0.3136 (1.85)*		-0.1010 (0.70)		
Other operating expense	-0.3336 (2.82)***				
Restructuring expense	0.1034 (2.90)***		0.1092 (3.41)***	0.1104 (3.39)***	0.1068 (3.83)***
Constant	-9.4495 (0.97)	-13.3550 (1.38)	-10.2661 (1.28)	-12.9538 (1.59)	-16.2308 (2.31)**
Observations	331	334	386	386	444
Adjusted R-Squared	0.16	0.10	0.15	0.12	0.11

casino floor space generally do not contribute to firm value. This makes sense if one considers that casino games are more or less identical at different casino properties. Hotel operations are also negative and significant in most models. This may indicate that there is a saturation of hotel rooms in many casino markets. Las Vegas certainly illustrates this fact after the recession's impacts sunk in. However, food and beverage expenditures have a positive impact on firm returns. We believe this indicates that this amenity provides the ripest opportunity for expansion at casino resorts – i.e., this is the amenity most likely to create a positive return to the firm's value. The negative and significant results on interest expenses may indicate that expansion (i.e., the incursion of debt and the associated interest expenses) may not overall lead to higher firm returns. Consistent with that result, *Restructuring expense* is negative and significant, indicating that the large number of casino mergers in recent years may not have had a positive impact on overall industry returns. Overall, the equations on expenditures (Panel B) explain less of return on assets than the revenue equations do, as judged by the adjusted R-squares for the various models. They range from 0.15 to 0.42 for the revenue models, but only 0.10 to 0.16 for the expenditure models. Although the explanations are more straightforward for the relationships between revenue and return on assets variables, arguably the expense models offer more insight into what types of investments – with respect to casino amenities – yield positive returns for casino owners.

We re-ran the models using period return (stock share price) as the dependent variable. These results are presented in Table 6, and tell a somewhat different story than the results described above. First, we should note that the unemployment variable is negative and significant. This suggests that as unemployment rises, the stock market's perception of casino

**Table 6. Results: Dependent variable = Period return**

<b>Panel A: Revenues</b>					
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Real GDP	0.0000 (2.74) <sup>***</sup>	0.0001 (3.24) <sup>***</sup>	0.0001 (5.06) <sup>***</sup>	0.0001 (3.47) <sup>***</sup>	0.0001 (5.11) <sup>***</sup>
Unemployment	-0.0506 (2.72) <sup>***</sup>	-0.0558 (3.36) <sup>***</sup>	-0.0556 (3.48) <sup>***</sup>	-0.0430 (2.70) <sup>***</sup>	-0.0538 (3.47) <sup>***</sup>
Direct gaming revenue	0.00491 (-1.25)	0.00384 (1.14)	0.00117 (0.42)	0.00445 (1.40)	
Hotel operation revenue	0.0417 (-3.01) <sup>***</sup>	0.0313 (2.37) <sup>***</sup>	0.0181 (1.80) <sup>*</sup>	0.0313 (2.56) <sup>**</sup>	
Food and beverage revenue	-0.0298 (1.65) <sup>*</sup>	-0.0222 (1.63)		-0.0232 (1.85) <sup>*</sup>	
Other gaming revenue	-0.0091 (0.60)			0.0018 (0.68)	
Interest income revenue	0.0211 (1.01)				0.0120 (0.66)
Partnership income	0.0029 (0.34)				0.0044 (0.51)
Constant	-3.3096 (2.74) <sup>***</sup>	-3.4900 (3.23) <sup>***</sup>	-5.0038 (4.98) <sup>***</sup>	-3.5646 (3.58) <sup>***</sup>	-4.7852 (4.81) <sup>***</sup>
Observations	235	293	339	289	347
Adjusted R-Squared	0.16	0.12	0.13	0.12	0.12
<b>Panel B: Expenses</b>					
	<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
Real GDP	0.0001 (3.63) <sup>***</sup>	0.0001 (3.24) <sup>***</sup>	0.0001 (4.24) <sup>***</sup>	0.0001 (4.69) <sup>***</sup>	0.0001 (4.96) <sup>***</sup>
Unemployment	-0.0329 (2.05) <sup>**</sup>	-0.0495 (3.01) <sup>***</sup>	-0.0539 (3.59) <sup>***</sup>	-0.0515 (3.32) <sup>***</sup>	-0.0512 (3.74) <sup>***</sup>
Direct gaming expense	-0.00404 (0.52)	-0.00474 (0.69)	-0.00483 (5.55) <sup>***</sup>		
Hotel operation expense	0.0741 (1.65) <sup>*</sup>	0.0790 (1.71) <sup>*</sup>	0.0058 (1.13)	0.0251 (0.86)	
Food and beverage expense	-0.0369 (1.67) <sup>*</sup>	-0.0488 (2.09) <sup>**</sup>			
Other gaming expense	0.0047 (0.86)				
Interest expense	0.0014 (0.16)		0.0087 (1.13)	-0.0138 (2.02) <sup>**</sup>	-0.0135 (2.13) <sup>**</sup>
Pre-opening and start-up expense	-0.0053 (0.27)		-0.0074 (0.01)		
Other operating expense	-0.0039 (0.34)				
Restructuring expense	0.0037 (0.39)		0.0001 (0.01)	0.0021 (0.21)	0.0027 (0.47)
Constant	-3.7312 (3.43) <sup>***</sup>	-3.2419 (2.84) <sup>***</sup>	-3.5202 (3.77) <sup>***</sup>	-4.1511 (4.31) <sup>***</sup>	-3.816 (4.47) <sup>***</sup>
Observations	304	307	356	356	413
Adjusted R-Squared	0.10	0.11	0.19	0.12	0.11

firm value drops. This is consistent with the recent stark evidence that the casino industry is not recession-proof. Oddly, in these results, *Direct gaming revenue* is insignificant in all models. *Hotel operations*, on the other hand, shows a strong positive result in all models. *Food and beverage* show a negative, but only mildly significant, impact on returns. The expenditures models indicate that higher direct gaming expenses lead to lower market value. This seems reasonable, if it is interpreted as “comped” services to customers. Of the amenities tested, only hotel operations were found to have consistently positive results, although hotel operations expenses are insignificant in two of the models.

Overall, these results must be interpreted with care. With a variety of models we have shown that the results are indeed sensitive to which explanatory variables are included in the model. Additionally, we should note that there are alternative specifications that could be used (e.g., net revenues by amenity) in subsequent analysis. The fact that some of the variables show conflicting results, depending on which dependent variable is used, may be an indication that the effects of investments and revenues in different amenities may vary across casino markets. For example, hotels may have a negative return in the Las Vegas market, but might still have a positive impact in less-developed casino markets. Other entertainment, such as bars and restaurants, for example, may be the primary mechanism by which casino resorts in Las Vegas have differentiated themselves during the most recent decade. Yet, in newer markets, such differentiation is not yet necessary or value-enhancing, as the more basic components of expansion – investment in casino space and hotel rooms – may be a wiser investment at this stage in those markets’ development. This suggests that one valuable extension to this analysis is to study specific markets, rather than industry-wide returns.

## **V. Conclusion**

In this study we have examined how revenues from and expenditures on different types of casino resort amenities affect overall firm-level market returns. We tested numerous variations on the models, and have found that the results are sensitive to the model specification. However, our overall evidence suggests that amenities other than casino space have indeed made significant contributions to firm values. This is consistent with what has been observed of the casino industry expansion during the past 20 years or so. Due to increased competition, casinos have had to find a niche – they have had to place themselves in a unique position in the market. Thus, amenities other than the casino have started to have a larger impact on the overall performance of the firm.

As an extension to this study, it would be worthwhile to analyze property-level data (i.e., using panel data by casino property by year). This would allow a better understanding of the returns to different amenities in different market conditions, different regions, etc. We believe this study provides a solid foundation for future analyses of what amenities have contributed most to casino firm returns. This information is obviously useful to industry managers, analysts and investors, but it will also be useful to academic researchers who wish to study the market structure of the ever-growing casino industry.

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