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DIFFERENCES IN FINANCIAL CHARACTERISTICS BETWEEN SMALL AND LARGE FIRMS: AN EMPIRICAL EXAMINATION OF THE CASINO INDUSTRY

**Arun Upneja
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and
Amrik Singh**

ABSTRACT

This study examines the differences in financial characteristics between small and large firms in the rapidly expanding casino industry. Financial ratios from 50 casino firms from the fiscal year 1995 are examined to determine the differences between small and large firms. Firms are classified into small and large groups based on the median value of total asset size for sample firms. Wilcoxon Rank Sum Test, a non-parametric test, is used to test for differences in the financial characteristics of small and large firms. The main results are that smaller firms have higher liquidity and short-term debt ratios. Larger firms have a higher proportion of long term and total debt. Larger firms do not appear to enjoy economies of scale, as they have lower efficiency ratios. However, larger firms also are more profitable.

Introduction

The growth in the popularity of gaming has, to a large extent, been attributed to the public acceptance of it as a form of entertainment. Expansion into new markets, increasing consumer demand, and the need to generate tax revenues for local and state governments have also influenced the growth in gaming. Gaming is legal in all states except Utah and Hawaii, and casino gaming is available in 28 states (Fahrenkopf, 1997). The number of visits and revenues has increased significantly in line with the spread of gaming. In fact, annual casino visitation has more than doubled since 1990, reaching an estimated 176 million visits in 1996. Similarly, casino revenues have grown from an estimated \$8.1 billion in 1990 to \$24 billion in 1996. This represented an estimated 52% of total gross gaming revenues of \$48 billion (American Gaming Association, 1996; 1997). The importance of gaming as an entertainment option is also reflected in its economic contribution. For example, gaming generated \$2.9 billion in taxes to federal, state, and local governments; accounted for \$7.3 billion in wages; and directly employed 284,000 people (American Gaming Association, 1996).

Despite the expansion of new facilities and the opening of new mega-casinos, riverboats, and Indian casinos, it appears the growth in gaming has slowed and the competition has become more intense in an industry that has likely reached saturation. Concerns have been raised about the lower than expected performance of casino companies nationwide (Gu, 1997). The closure of Harrah's Jazz Casino in New Orleans, the bankruptcy of Stratosphere Corporation, and the financial troubles of Prudential Riverboat Inc., Casino Magic, and Argosy Gaming reflect unfavorable market conditions (Gu, 1998a).

To date, there have been few studies in the hospitality industry that investigate the financial performance or characteristics of casino firms. Differences in the financial characteristics between large and small casino firms have been rarely explored and documented. Therefore, the primary purpose of this study is to examine whether statistically significant differences exist in the financial characteristics between small and large firms in the casino industry. More specifically, the differences are measured in terms of liquidity, solvency, efficiency, and profitability ratios. In addition, another purpose of this paper is to simply document the financial ratios for the casino industry as a whole and for different sized casino firms.

The casino industry has many characteristics that differ from other industries. The products of the casino 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. The increase in size has also resulted in an increase in casino firms that list on the stock exchanges. This is in direct contrast with some other industries that have matured and have had firms listed on the stock exchanges for many decades. From the above discussion, it is clear that this industry is sufficiently different from other industries and warrants further attention from academic researchers.

Literature Review

Previous research has demonstrated that there are significant differences in financial characteristics among different sized firms. Fieldson, Longford, and McLeary (1987) suggest that the financial ratios for average sized firms will be similar to the industry averages. Walker and Petty (1978) show "that small growth firms preparing to enter the public markets maintain a significantly different financial profile from that of larger corporations." Osteryoung, Constand, and Nast (1992) also "indicate that there are significant differences between many of the industry averages ratios for small private and large public firms." Further they recommend that "financial analysts, lenders, and small firm managers should be sure to identify an appropriate industry average ratio for comparison purposes when examining these ratios." However, differences in financial characteristics between small and large firms have been rarely explored and documented in the hospitality literature.

Financial ratios have been used for a very long time by academic researchers and financial analysts. For example, Rosendale (1908) documents the use of current ratio at the turn of the century. Since the early 1900s, a voluminous body of literature has developed on ratio analysis. Ratios have been used to predict financial characteristics (Horri-gan, 1966), financial distress (Beaver, 1966; Johnson, 1970; Ohlson, 1980), investment opportunities (O'Connor, 1973; Roenfelt & Cooley, 1978) and credit worthiness, among other uses. However, financial ratios themselves are not meaningful. Andrew and Schmidgall (1993) note that ratios can be meaningful when they are compared to a standard or a target such as industry-wide averages, past performance, or the budgeted percentages. Lev (1969) indicates that firms adjust their financial ratios according to industry-wide averages. Andrew and Schmidgall (1993) also offer statistical evidence that

firms whose leverage ratios differ from the industry average tend to move toward the industry average over time. Therefore, comparison of financial ratios of the firm to a benchmark must precede proper evaluation of the financial condition of the firm. It follows that the selection of an appropriate benchmark is very important because comparison with a wrong group can lead to erroneous inferences. However, a review of the literature indicates the paucity of information on the financial structure of publicly traded casino firms.

Researchers in the hospitality field also extensively use financial ratios. For example, Schmidgall, Geller, and Ilvento (1993) describe how the use of ratios can enhance the usefulness of the statement of cash flows. Swanson (1991) uses ratios to measure the closeness of hotel firms to default on their obligations. Mount and Schmidgall (1992) use the nine ratios suggested by Geller, Ilvento, and Schmidgall (1992) to describe how ratios change over time and provide industry benchmarks in their analysis of four lodging firms and ten restaurant firms from 1986–1990.

Within the hospitality industry, there have been few studies on the capital structure or debt structure of firms and its relationship to other factors. Even then, previous studies in hospitality have shown varied relationships. Kwansa, Johnson, and Olsen (1987) found no significant relationships between hotel debt/equity ratios and the independent variables such as growth and profitability. On the other hand, Sheel (1994) found size, profitability, and operating risk to be significantly related to the debt to asset ratio. In a more recent study, Sheel and Wattanasuttiwong (1998) found significant relationships between restaurant firms' debt/equity ratios and the risk/size adjusted common equity returns.

Gu and McCool (1993/1994) have also examined the debt ratios and found significant differences across different types of restaurant firms. In another study, Gu (1995/1996) failed to find any significant differences in leverage use when he compared the leverage ratios of unusually profitable firms in the hotel industry against the industry averages. Gu (1998b) has also identified factors that differentiated light debt users from heavy debt users. He found managerial control, size, and type of operations explained diversity in debt use while growth and profitability did not.

In a study related to this paper, Gu (1999) analyzed the financial condition and performance of small and large casino firms in Las Vegas using the 1997 Nevada Gaming Abstract. Casino firms with annual gaming revenues of \$72 million or more (21 casinos) were categorized in the Abstract as large firms, while those below \$72 million (15 casinos) made up the small firms. The ratio analysis revealed that larger casinos had better liquidity and relied less on debt financing. Larger casino firms also had higher returns on invested capital and better returns on average assets ratio than small casinos. Small casinos were less efficient in generating revenues, incurred higher cost of sales, labor costs, and a higher debt leverage. Although the ratios showed that small casinos were efficient in using assets to generate revenues, Gu cautioned that the ratios could be misleading due to the high obsolescence of small casinos, which may have inflated the revenue/asset ratio.

The two studies that are directly comparable to this study are Walker and Petty (1978) and Osteryoung, Constand, and Nast (1992). Walker and Petty investigate the differences in financial characteristics between large public firms and small private firms that are preparing to go public. The large firm data were collected from COMPUSTAT. The data on small firms were collected from SEC filings by those small firms that were intending to go public at the time of the filing. Walker and Petty use a multiple discriminant model to discriminate between a matched sample of 31 large and 31 small firms. The sample firms came from 10 different industry groups. The main result from Walker and Petty is that there are significant differences between small and large firms. The larger firms were more likely to distribute dividends and have higher levels of liquidity. Smaller firms have better profit margins and a greater tendency to use short-term debt.

Osteryoung et al. (1992) attempt to replicate and extend the Walker and Petty (1978) research. They collect large firm data from COMPUSTAT. "Financial studies of the small business" database published by the Financial Research Associates was used to compile the ratios for small firms. Because the published data on small firms did not contain any distribution statistics, no statistical test (except for t-statistics on the differences between the two groups) was performed. Osteryoung et al. report that there is no difference in the liquidity ratio between small and large firms (in contrast with Walker and Petty). Osteryoung et al. speculate that the different result may be because the focus of the Walker and Petty study was on manufacturing firms, the bulk of the sample of their study was in retailing, wholesaling and the services sector. They report that smaller firms have higher total debt and higher short-term debt ratio. Consistent with Walker and Petty, Osteryoung et al. also find that asset turnover ratio and profitability ratios are significantly higher for smaller firms.

Methodology

Hypotheses Development

This paper investigates the differences in the financial structure and profitability of small and large casino firms by dividing the ratios into the following four groups: liquidity, solvency, efficiency, and profitability ratios. The ratios used in each group were based on prior studies and there were two to four ratios in each group. Table 1 describes the ratios, group, and the formula used to calculate each ratio.

Table 1
Description of the ratios analyzed in the study

Classes	Abbreviation	Name of the ratio and formula used to calculate the ratio	COMPUSTAT data items used in the formula
Liquidity	CR	Current ratio [current assets/current liabilities]	#4 #5
	QR	Quick ratio [current assets-inventory/current liabilities]	#4 - #3 #5
Solvency	STDR	Short-term debt ratio [short-term debt/ total assets]	#5 #6
	LTDR	Long-term debt ratio [long-term debt/ total assets]	#9 #6
	TDR	Total debt ratio [total debt/total assets]	#181 #6
Efficiency	AT	Asset turnover [sales/total assets]	#12 #6
	FAT	Fixed asset turnover [sales/fixed assets]	#12 #8
Profitability	ROA	Return on assets [net income/total assets]	#18 #6
	ROE	Return on equity [net income/owners' equity]	#18 #216
	PM	Profit margin [net income/total revenue]	#18 #12
	EPS	Earning per share [net income/common stock outstanding]	#58

The liquidity ratios measure the ability of a firm to meet its short-term liabilities, that is, the ability of the firm to pay short-term bills as they become due. There is no consensus in the literature regarding the differences between the liquidity of small versus large firms. Walker and Petty (1978) show that large firms "have greater liquidity than small companies." However, evidence presented in Osteryoung et al. (1992) suggests no differences in liquidity between small and large firms. In contrast to either of these conclusions, we believe that the larger casino firms have a greater ability to attract customers throughout the year and consequently a greater ability to generate cash flows. This ability to generate cash flows implies that the larger firms do not have to hold a large amount of current assets and can use the cash generated from daily operations to pay off the liabilities as they become due. Because the larger firms are paying the liabilities as they come due from daily operations, larger firms have to hold lesser amounts of current assets (as compared to smaller firms). Therefore, we hypothesize that larger casino firms have lower liquidity ratios than smaller casino firms.

Solvency ratios are used to measure the firm's degree of debt financing and the ability to meet its debt obligations. There appears to be a consensus in the literature that the

proportion of short-term debt is higher in smaller firms and conversely the proportion of long-term debt is higher in larger firms. In addition, larger firms can attract a higher amount of long-term debt, either because they have lower risk due to diversification (Ferri and Jones, 1979) or they face lower issuance costs (Marsh, 1982). In general, casino business is inherently a very high risk business. The heavy dependence on discretionary income for entertainment makes casino hotel revenue more volatile than regular hotels. Evidence of the high risk is reflected in its beta, which was reported by Gu and Ku (1997) to be 1.22 in 1994 compared to the hotel industry average of 0.79. Overcapacity, intense competition, saturation of market, unstable demand, and lower credit ratings of casino firms have increased the perceived risk of casino firms. Casino firms will be faced with a higher level of financial and operating risk that will lead to a higher cost of capital (Gu, 1998a). We believe that to mitigate high risk, casino firms will attempt to attract as much debt as they can get. As discussed above, larger firms can attract a greater proportion of debt in their capital structure because they have greater access to capital markets. It follows that larger firms will have higher total debt and long-term debt ratios. This prediction is in line with prior research, although with a different explanation. Smaller firms will be less successful in attracting long-term financing. Therefore, we hypothesize that smaller casino firms have higher short-term debt ratios while larger firms have higher long-term debt and total debt ratios.

Efficiency ratios measure management effectiveness in using its assets. There is consensus in the prior literature that smaller firms are more efficient in utilizing the assets of the firm. Profitability ratios are used to measure the management's overall effectiveness. Return on assets, return on equity, and profit margin are commonly used to measure the management's overall effectiveness. Both the studies mentioned above found strong evidence that smaller firms had higher efficiency and profitability ratios. There is no reason to believe that the relationship between small and large casino firms will be any different from their counterparts in the manufacturing and retailing sectors. Therefore, we hypothesize that smaller casino firms have higher efficiency and profitability ratios. Table 2 summarizes the research hypotheses tested in this study.

Table 2
Predictions about relative financial ratios between small and large firms

Ratio class	Ratio	Small Firms	Large Firms
Liquidity	CR	↑	↓
	QR	↑	↓
Solvency	STDR	↑	↓
	LTDR	↓	↑
	TDR	↓	↑
Efficiency	AT	↑	↓
	FAT	↑	↓

Profitability	ROA	↑	↓
	ROE	↑	↓
	PM	↑	↓
	EPS	↑	↓

Please see Table 1 for abbreviations.

Sample and Data Collection

The sample firms for this study are publicly held casino firms that own and operate land and/or water-based casino(s), casino hotels, or slot routes and are classified under SIC code 7990. The final sample is composed of 50 casino firms listed in the three major stock exchanges, New York Stock Exchange (NYSE), the American Stock Exchange (AMSE), and NASDAQ. The financial data of sample firms is collected from the Full Coverage Annual COMPUSTAT database (1996 edition), thereby capturing the data for the year fiscal year 1995. COMPUSTAT classifies firms in the year 1995 all firms that have fiscal year-end from June 1995 through May 1996. We decided to perform a cross-sectional analysis of the financial ratios because we felt that many new firms are issuing stock every year. The universe of publicly traded casino firms is very limited to begin with and considering that multiple new entrants list every year, comparison between years will be very confusing. For example, a firm that is small in one year may be classified as large in another because a few smaller firms may decide to issue stock in a particular year. Therefore, we investigated the financial ratios for the fiscal year 1995 (described above) that was the latest year available at the time the study was performed.

This study analyzes 11 financial ratios. These ratios are categorized into four basic classes: liquidity, solvency, efficiency, and profitability. The liquidity of a firm is measured by two financial ratios, the current ratio (CR) and the quick ratio (QR). The current ratio is calculated by dividing the current assets by current liabilities. The quick ratio is calculated by excluding inventory from current assets and dividing by current liabilities. The solvency of a firm is analyzed in terms of short-term debt ratio (STD), long-term debt ratio (LTD), and total debt ratio (TDR). The total debt of the firm is divided into short-term and long-term debt. The common denominator for the three ratios is total assets. The efficiency of small and large firms is measured by asset turnover (AT) and fixed asset turnover (FAT). The asset turnover ratio is total sales divided by total assets. The fixed asset turnover is total sales divided by fixed assets of the firm. Finally, the profitability of sample is examined in terms of return on assets (ROA), return on equity (ROE), profit margin (PM), and earning per share (EPS). Return on assets and return on equity are measured by dividing net income from continuing operations by total assets and equity, respectively. Profit margin and earnings per share are measured by dividing net income from continuing operations by total revenue and common stock outstanding, respectively.

Sample firms are classified into large and small groups, where the threshold for small-large classification is the median value of total assets for the sample firms. Because

Shapiro-Wilk (W) test statistic indicated that the samples of small and large groups do not show normal distribution and equal variances, we decided to use Wilcoxon Rank Sum Test to test for differences among financial ratios. Wilcoxon Rank Sum Test is a non-parametric test that does not assume normal distribution and equal variances.

Results and Discussion

Table 3 presents the descriptive statistics for the sample. Mean, median, and standard deviation for each ratio are presented for small firms, large firms, and the entire sample. There are 50 firms in the sample and not all the ratios could be calculated for each firm.

Table 3
Summary statistics of the financial characteristics of casino firms,
divided into small and large by median asset size

Ratio class	Ratio	Small			Large			All		
		Mean	Median	Std Dev	Mean	Median	Std Dev	Mean	Median	Std Dev
Liquidity	CR	1.67* (25)**	1.18	1.45	1.48 (25)	1.28	0.83	1.57 (50)	1.24	1.17
	QR	1.34 (25)	0.86	1.08	1.29 (24)	1.16	0.61	1.32 (49)	1.16	0.87
Solvency	STDR	0.18 (25)	0.15	0.10	0.12 (25)	0.10	0.06	0.15 (50)	0.11	0.09
	LTDR	0.23 (22)	0.14	0.22	0.62 (25)	0.60	0.22	0.44 (47)	0.45	0.29
	TDR	0.59 (25)	0.56	0.44	0.81 (25)	0.79	0.24	0.70 (50)	0.68	0.37
Efficiency	AT	0.79 (25)	0.55	0.60	0.71 (24)	0.69	0.23	0.75 (49)	0.69	0.45
	FAT	1.62 (24)	1.04	1.19	1.10 (24)	0.87	0.59	1.36 (48)	0.91	0.97
Profitability	ROA	-0.02 (25)	-0.03	0.12	0.01 (25)	0.02	0.06	-0.01 (50)	0.01	0.09
	ROE	-0.10 (25)	-0.05	0.32	-0.01 (25)	0.07	0.32	-0.06 (50)	0.00	0.32
	PM	-0.05 (25)	-0.06	0.19	0.02 (25)	0.02	0.10	-0.01 (50)	0.01	0.15
	EPS	-0.27 (25)	-0.04	0.94	-0.16 (25)	0.10	1.37	-0.21 (50)	-0.04	1.16

* The value of the ratio

** Sample size

Notes: Sample firms are classified into large and small groups, where the threshold for small-large classification was at the respective median value of total asset size for the sample firms.

Please see Table 1 for abbreviations.

Liquidity ratios measure the ability of the firm to meet its current liabilities. As explained before, we expect smaller firms to be more liquid than larger firms. This is evident in Table 3, where the current ratio for smaller firms is 1.67 versus 1.48 for larger firms and the quick ratio is 1.34 versus 1.29 for the larger firms. Although the differences are not statistically significant for either of the two variables (Table 4), smaller firms, on average, have more current assets on their balance sheet than larger firms. The standard deviations of both the ratios are also smaller for the larger firms (0.83 versus 1.45). Smaller standard deviations for large firms suggest that casino firms converge to similar capital structure as they grow in size.

Table 4
Test of differences in financial characteristics between small and large casino firms,
where the classification between small and large was based on median assets
(Wilcoxon Rank Sum Test)

Ratio class	Ratio	Mean for Small Firms	Mean for Large Firms	Absolute Difference of mean	Z-value	Prob> Z
Liquidity	C	1.67* (1.45)**	1.48 (0.83)	0.19	-0.5728	0.5667
	QR	1.34 (1.08)	1.29 (0.61)	0.05	-0.6705	0.5025
Solvency	STDR	0.18 (0.10)	0.12 (0.06)	0.06	2.3594	0.0183
	LTDR	0.23 (0.22)	0.62 (0.22)	0.39	-4.6584	0.0001
	TDR	0.59 (0.44)	0.81 (0.24)	0.22	-2.8913	0.0038
Efficiency	AT	0.79 (0.60)	0.71 (0.23)	0.08	0.1300	0.8965
	FAT	1.62 (1.19)	1.10 (0.59)	0.52	0.9093	0.3632
Profitability	ROA	-0.02 (0.12)	0.01 (0.06)	0.03	-1.4880	0.1367
	ROE	-0.10 (0.32)	-0.01 (0.32)	0.00	-1.1772	0.2391
	PM	-0.05 (0.19)	0.02 (0.10)	0.07	-1.7126	0.0868
	EPS	-0.27 (0.94)	-0.16 (1.37)	0.11	-0.4967	0.6184

* The value of the ratio

** Standard Deviation

Notes: Sample firms are classified into large and small groups, where the threshold for small-large classification was at the respective median value of total asset size for the sample firms.

Please see table 1 for abbreviations

Solvency ratios measure the extent of debt financing in the capital structure of the firm. Scott and Martin (1975) found that capital structure differs across industries with large firms using more debt than small firms. We expect that larger firms enjoy greater access to the capital markets and will have a greater proportion of debt in their capital structure. In addition, larger firms will have greater success in attracting long-term financing than smaller firms. The results in Table 4 show that smaller firms have a higher short-term debt ratio (0.18 versus 0.12 for large firms) and lower long-term debt (0.23 versus 0.62 for large firms). Finally, large firms have a greater proportion of total debt ratio (0.81) as compared to small firms (0.59). All the differences are statistically significant in the predicted direction.

Efficiency ratios measure the effectiveness of the managers in using the assets. We expect smaller firms to be more efficient in use of the assets. Results in Tables 2 and 3 provide mixed support for this hypothesis. Smaller firms have a higher mean asset turnover ratio (0.79) as compared to larger firms (0.71). However, a comparison of the median asset turnover shows a completely different result. Small firms have a median ratio of 0.55 as compared to 0.69 for the large firms. A comparison of the standard deviations shows that smaller firms have more variability in their efficiency ratios. Similar to firms in the manufacturing and retailing sectors, casino firms do not seem to enjoy the economies of scale. Small firms do appear to be more efficient (although not statistically significant) in turning over the fixed assets (1.62 versus 1.10). The median for small firms (1.04) is also higher than the median for larger firms (0.87). This result is consistent with prior studies and the hypothesis.

Profitability ratios measure the firm's ability to earn profits and the potential to sustain and increase profits in future. We expect smaller firms to be more efficient than larger firms. This hypothesis was not supported, as the smaller firms were less profitable in 1995 than the larger firms. Although the differences between small firms and large firms are not statistically significant (except the profit margin), all the differences are in the opposite direction of the prediction. These findings are similar to the results of Gu's (1999) comparison of Las Vegas hotel casinos that showed higher efficiency ratios for large casinos in using human resources and assets in generating revenues. Such efficiency and cost advantages may stem from economies of scale since large casinos enjoyed cost advantages in cost of sales, labor cost, and advertising and promotion. Gu's analysis also showed that total overhead expenses before taxes were 36.6% for small casinos and 26.6% for large casinos. Income before taxes showed a loss of 0.3% for small casinos while it was a positive 14.1% for large casinos. The poor performance of small casinos was attributed largely to overhead expenses related to the higher debt leverage and higher interest cost for small casinos. Size has an advantage when it comes to casino firms and anecdotal evidence also points to the fact that new casinos are generally larger than older casinos.

Conclusion and Implications

There appear to be substantial differences between the financial ratios of small casino firms and large casino firms. Small firms have higher liquidity ratios (not statistically

significant) and higher standard deviation. The differences in the solvency ratios are statistically significant in the predicted direction. Larger firms do not appear to need short-term loans and are able to attract considerably higher proportion of long-term debt. One implication of this result is that, given the assumption that the interest rate is in part determined by the term of the loan, small and large firms face differential effective interest rate on the total outstanding debt. Another implication is that small and large firms may face a different interest burden (as a percentage of revenue), in part due to the above-mentioned differential rate and in part due to the differential level of total debt in the capital structure. Another avenue for future research is to examine the trade-off involved in selecting the mix of debt between short and long term.

Examination of efficiency ratios revealed that, like their counterparts in other sectors, large casino firms do not appear to enjoy the economies of scale. Smaller firms were generally more efficient. However, the standard deviation of the means for smaller firms was higher than that of larger firms and the median asset turnover was higher for large firms. The inconsistency between the mean and median is very interesting. If casino firms (as they grow larger) are converging to a similar capital structure, then they may also be converging to similarity in their efficiency and profitability. Larger firms do appear to be more profitable as shown by the four profitability ratios used in the study.

It should also be pointed out that the findings of this study are in many ways in sharp contrast to the findings reported by Gu (1999) in his comparison of small and large casinos in Las Vegas. The current ratios, solvency ratios, and efficiency ratios in this study were different from the ratios of Las Vegas casinos (not reported in this study). The methodology used to categorize small and large casino firms—scope of industry, year of data analysis, and sample size—are different for both studies. Therefore, caution must be used in interpreting the results since they are not strictly comparable.

It is clear from the above discussion that we still have much to learn about the specifics of the financial characteristics and capital structure of casino firms and the determinants of the mix. Clearly future research is needed to answer the questions raised by this research and to advance our knowledge of the casino industry.

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