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## The structure, conduct, and performance of Nevada's slot route industry

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THE STRUCTURE, CONDUCT, AND  
PERFORMANCE OF NEVADA'S  
SLOT ROUTE INDUSTRY

by

Benedict Dell'Orto

A thesis submitted in partial fulfillment  
of the requirement for the degree of

Master of Arts

in

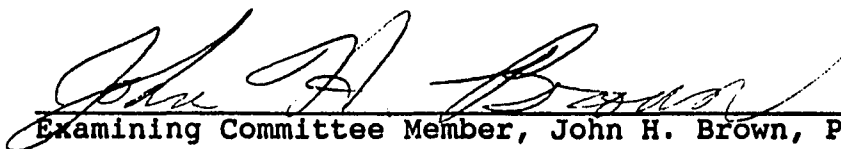
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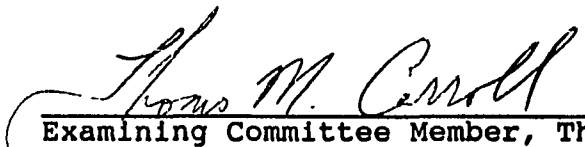
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## ABSTRACT

The four largest firms in the Nevada slot route industry control over 70 percent of the industry. It's structure was shown to be highly concentrated using the Herfindahl-Herschman index.

The individual slot route operators appear to conduct themselves in a non-competitive manner by differentiating their respective products. Each firm in the industry established their own niche either through product or service differentiation.

Firms in concentrated industries tend to earn monopoly profits. Yet, using Tobin's  $q$  and Jensen's coefficient, we show that Nevada's slot route firms did not earn excess profits, despite the high degree of industrial concentration.

The presence of a high level of industrial concentration, non-competitive product differentiation, and the lack of economic profits may be explained in large measure by competition from casinos. The inclusion of slot route firms within a more broadly defined Nevada gaming industry would decrease concentration measures consistent with competitive market performance conditions found in this study.



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## I. INTRODUCTION

The Nevada slot route industry is composed of those establishments that offer non-traditional gaming in non-casino locations such as bars and supermarkets. During the past five years the industry has grown along with the population of the state of Nevada. Because of licensing, economies of scale, and other factors, the slot route industry's four largest firms control over 75 percent of the slot route market as of 1991. This economic concentration will be analyzed and discussed to determine whether or not the large firms in this market have significant monopoly power.

As the industry has grown, so has its importance to the state of Nevada. Yet, an industrial organizational study of the Nevada slot route industry has never been done before. Furthermore, the degree of concentration in the industry increased. As a result, a need exists to describe the industry's structure, evaluate its conduct, and measure its performance.

This study will examine the four publicly held corporations in the industry. Data about the other firms were not available. However, these firms are very small. Also, revenue figures for the industry were not available, but proxy variables were developed. Thus, these data limitations did

not prove an insurmountable problem.

This paper will first examine the market for the services provided by the slot route operators. This will lead to a discussion of product differentiation and possible substitute services. The focus will then shift to the licensing qualifications necessary for entry into this industry. Next, the economic concentration of the industry will be measured and analyzed. The conduct and strategies of the individual firms will then be examined. The focus then will change to a financial analysis of the returns on assets and equity for firms in the industry. Finally, possible reasons for the oligopoly structure of the market and the estimated value of a restricted gaming license will be discussed.

## II. THE LITERATURE REVIEW

Joe S. Bain's Industrial Organization: A Treatise states that the "performance of the economy or individual parts of the economy are what is primary in analyzing an industry."<sup>1</sup> Bain asserts that it is necessary to not only see how firms perform, but to also explain how and why they perform in a particular manner. This type of analysis can be done by first observing how a market is structured, and then seeing how this structure leads to the conduct of firms in the market. This method will be used to analyze a key segment of Nevada's gaming industry, the slot route industry. First the supply and derived demand sides of the slot route industry will be examined, followed by an evaluation of the worth of a restricted gaming license.

The slot route industry has grown 50 percent since 1986.<sup>2</sup> In 1986 the industry had about 10,000 slot machines. The growth over the past five years has expanded the industry to over 15,000 machines in 1991. Most of the market share in this industry is in the top four firms. As a result, one would expect that this oligopolistic structure should lead to

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<sup>1</sup>Joe S. Bain, and P. David Qualls, Industrial Organization: A Treatise (Greenwich, Conn.: JAI Press, 1989), p. 3.

<sup>2</sup>Nevada, Gaming Commission, "Quarterly Reports," 1986 to 1991.

monopoly profits. Bain in his work showed that "either higher or lower seller concentration, or more difficult or easier entry, would have a significant impact on the incidence of scale inefficiencies."<sup>3</sup> The higher the concentration level in an industry, generally the less competition exists and the greater the chance of collusion and economic profits. Furthermore, the slot route industry has a high degree of seller concentration. The four largest firms have over 70 percent of the outstanding number of restricted slots statewide. This high degree of seller concentration should also "lead towards cooperative action to establish a joint profit maximizing industry price and output."<sup>4</sup> Yet, this spirit of cooperation does not seem to have evolved in the slot route industry. Thus, despite the fact that the slot route industry has only four main suppliers, the currently regulated environment seems to have fostered competition.

In examining the demand side of this industry, the main users of these slots are bars, restaurants, and convenience stores. These establishments must obtain what is called a restricted gaming license in order to participate in this industry.<sup>5</sup> The bargaining power of these locations is generally small, but certain businesses do have more

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<sup>3</sup>Bain and Qualls, Industrial Organization, p. 7.

<sup>4</sup>Ibid., p. 83.

<sup>5</sup>According to Nevada Revised Statute 463.018, the restricted gaming license is for establishments that have 15 or fewer slot machines.

bargaining power if they are part of a chain of stores.<sup>6</sup>

If a slot route operator has three or more locations, the operator needs both a slot route operators license and a restricted license. On the surface this criterion would not appear to be a large barrier to entry; however, the advantages that it gives to the incumbent firms may be a deterrent to potential entrants.

The slot route industry has all the major characteristics of oligopoly: highly concentrated market share, economies of scale, and a barrier to entry. Economic theory would lead one to believe that the market participants in a non-competitive and growing industry are likely to have above-normal rates of return. Economics literature also leads to the conclusion that the firms in the industry have an incentive to collude, and thus further lessen competition.<sup>7</sup> The performance for the firms in the slot route industry is examined by calculating the Tobin's q for the relevant firms and their return on equity. In addition, the slot route firms' relative rates of return on their stock price over the past two years is examined and compared that to the return on the stock market as a whole. These measures offer some evidence on the presence of non-competitive business practices.

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<sup>6</sup>Jackpot Enterprises, "Annual Report," 1991.

<sup>7</sup>C.E. Ferguson, and S. Charles Maurice. Economic Analysis (Homewood, Illinois: Richard D. Irwin, Inc., 1970), p. 237.



### III. SLOT ROUTE MARKET STRUCTURE

This first section will discuss the derived demand for products and services of slot route firms. In addition, substitute products and the product differentiation between the firms will be discussed. Since these firms provide machines for players at non-casinos, our discussion focuses on the derived demand for gaming machines at restricted locations. Only cursory attention will be given to the slot machine player.

#### A. Some Aspects of the Market for Slot Route Firms' Products and Services

##### Definition of Slot Route Operator

According to Nevada Revised Statute 463.018 a slot route operator:

Means a person who, under any agreement whereby consideration is paid or payable for the right to place slot machines, engages in the business of placing and operating slot machines upon the business premises of at least three or more locations.<sup>1</sup>

A slot machine is considered a gaming device that is coin operated. This definition includes the traditional reel-type slots as well as video poker, keno, blackjack, and other similar games. The businesses that have a restricted license

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<sup>1</sup>Nevada. Revised Statutes, (1991).

are mostly supermarkets, drug stores, merchandise stores, convenience stores, bars, and restaurants.

At the end of fiscal year 1990-91 there were 77 licensed slot route operators in the state of Nevada.<sup>2</sup> The slot route operator usually places slot machines in businesses that have a restricted gaming license.<sup>3</sup> Under Nevada Revised Statute 463.161 this is a business that "has 15 or fewer slot machines and the operation of the slot machines is incidental to the primary business conducted [at the establishment]."<sup>4</sup>

#### Types of Slot Machine Licenses

Gaming is legal in all parts of Nevada according to state law; however, some locations are precluded by local ordinance.<sup>5</sup> Gaming licenses are of two types; restricted and non-restricted. The restricted licenses are for 15 or fewer slot machines and non-restricted licenses are for more than 15 slot machines and table games such as craps, blackjack, and roulette.

Nevada gaming businesses with restricted licenses have fewer than one-sixth as many slot machines as those with non-

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<sup>2</sup>Nevada. "1991 Fiscal Year to Date Report," Nevada Gaming Commission and Gaming Control Board. (1991).

<sup>3</sup>Some slot route operators own or run casinos.

<sup>4</sup>Nevada. Revised Statutes, (1991).

<sup>5</sup>The city of Boulder City, Nevada, has no legalized gambling.

restricted as restricted licenses.<sup>6</sup> The competition provided by casinos with non-restricted licenses is enormous. In the 338 non-restricted locations there were over 135,000 slots in operation, compared to only 15,000 machines in restricted locations as of June 30, 1991.<sup>7</sup> Along with the slots, the non-restricted licenses holders (casinos) also offer tables games such as blackjack, roulette and craps to entertain their clientele. In addition to the greater diversity games, certain gambling halls are commonly thought to have a higher payout ratio on their slots than other casinos and restricted gaming operators. For example, the Boulder Highway and downtown Las Vegas casinos in Clark county are also believed to offer higher payout ratios. Casinos also offer a greater variety of entertainment such as shows, live bands, slot clubs, bowling, and bingo. Furthermore, casinos offer very competitively priced food and beverages, make extensive use of coupon discounting, and provide complimentary products and services to good customers. Consequently, players tend to spend more at the casinos than at the restricted locations. And it is generally held that a visit to a restricted license location is a casual affair for which consumers have a limited budget. Thus, slot route operators face a derived demand for their products and services for which there is intense competition.

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<sup>6</sup>Nevada. "1991 Fiscal Year to Date Reports," p. 14.

<sup>7</sup>Ibid.

Differentiations of Slot Route Operators  
Products and Services

To a casual observer, the slot route operator need only supply machines and coins for the establishments that carry their machines. But the slot route operator does much more to solicit and maintain its clientele. "Machines are routinely serviced, repaired, and maintained by mechanics."<sup>8</sup> Indeed twenty-four hour servicing is an important way in which firms compete.<sup>9</sup> The ability to ensure proper machine operations keeps customers happy and increases profitability for both parties.

Although slot route operators compete with an almost homogeneous product, there are different ways in which the competing firms try to differentiate their products. One of the ways that the slot route operators compete is by product differentiation through the use of progressive slot machines. These slot machines use a jackpot that increases incrementally with each bet. Slot route operators also may loan start-up capital to businesses to increase their client base. Price competition is also used. For example, slot route operators may aggressively pursue chain stores, where the amount of potential revenue is expected to be high.

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<sup>8</sup>U.S., Securities and Exchange Commission, Jackpot Enterprises, Inc., Form-10K, (Washington, D.C.: GPO, 1991), p. 2.

<sup>9</sup>Ibid., p. 2.

### Types and Numbers of Slot Operators Licenses

As with all gaming in the state of Nevada, the slot route operators need to be licensed. They must possess a slot operators license. Additionally, each establishment that contains slot machines needs a restricted gaming license. As of June 30, 1991, there were 77 slot route operators licensed in the state of Nevada.<sup>10</sup> This figure reflects a decrease from the 83 route operators in the state for the same time period in 1986. There were 1,849 restricted licenses in effect as of June 6, 1991.

### Procedures for Obtaining a Slot Operators License

A slot route license is issued to a route operator if the operator presently has 3 or more locations or a commitment to shortly have 3 or more locations.<sup>11</sup> But this license will only be issued when a proprietor has already obtained a restricted license. To obtain a restricted license where there has not been one is usually costly and time consuming. Background checks on a prospective licensee include investigations of both business and personal associations, as well as financial transactions. Moreover, there is also no assurance that after thousands of dollars are spent that a

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<sup>10</sup>Nevada. "Quarterly Gaming Report," p. 17

<sup>11</sup>Nevada. Revised Statutes, (1991).

license will be issued<sup>12</sup>. The risk of not getting a license, the out-of-pocket costs, and the time necessary to complete the license procedure keeps many potential entrants out and functions as a significant barrier to entry.

Restricted licenses are also limited. "Many visitors to Nevada are surprised when they discover slot machines in airports, grocery stores and laundromats."<sup>13</sup> Despite the seeming omnipresence of gaming in Nevada, the gaming authorities have the "responsibility to assure that the location of gaming devices is consistent with state policy to promote public welfare."<sup>14</sup>

#### Restrictions to Licensing

By regulation, the following locations are unsuitable for gaming:

1. Premises near churches, schools, hospitals, and public playgrounds;
2. Premises in a location contrary to local zoning ordinance unless the premises housed gaming before the effective date of current zoning;
3. Premises difficult to police;
4. Premises lacking adequate supervision or surveillance;

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<sup>12</sup>Currently the application fee for a restricted license is \$500. The per hour charge for background checking is \$150. These fees, along with attorney's fees for an applicant, can easily surpass several thousand dollars.

<sup>13</sup>Anthony N. Cabot, (ed.), Nevada Gaming Law. (Las Vegas, Nevada: Lionel, Sawyer and Collins, 1991), p. 46.

<sup>14</sup>Ibid., p. 47.

5. Premises having a substantial minor clientele unless the applicant can show sufficient precautions to separate the area used by minors from the gaming areas; and
6. Brothels.<sup>15</sup>

Even if the establishment's location is suitable, there are also other criteria. Among these are:

1. The amount of floor space used for gaming and that used for the primary business.
2. The amount of investment in slots compared to that of the investment in the business.
3. The amount of time used to manage the slots compared to the business.
4. The revenue generated from the slots compared the primary business.
5. The portion of financing from the slot route operator used for the creation of the business.
6. Other factors such as name, marketing practice or public perception showing that the slot machines are or are not incidental to the primary business.<sup>16</sup>

In four circumstances there is a presumption that a slot machine operation is incidental to the primary business.

These are:

1. Taverns;
2. Convenience stores with no more than seven slot machines;
3. Grocery stores; and
4. Drug stores.

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<sup>15</sup>Ibid.

<sup>16</sup>Ibid., p. 49.

These four areas are where most slot route operators have their machines.<sup>17</sup>

#### Placement Arrangements

Slot route operators have two types of placement arrangements with their customers: subleasing or licensing space, and revenue sharing<sup>18</sup>. Each type of agreement is suited to particular locations.

Affiliated chain stores will generally sublease or license space in their stores to a slot route operator. The average rent charged for the space is approximately \$125 per machine per month.<sup>19</sup> The rent paid has recently increased because of the competition to place slot machines at chain stores.<sup>20</sup> The advantage to the sublease or licensing is that the chain store does not need a license, thereby keeping the chain stores out of the management of gaming activity and avoiding the costly licensing process.

The other type of agreement is revenue sharing. This agreement is made with an establishment whereby slots are placed in the business and the revenue generated is split with

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<sup>17</sup>Ibid., p. 50

<sup>18</sup>U.S., SEC, United Gaming, Form-10K, p. 4.

<sup>19</sup>The \$125 per month charge per machine was obtained from Jackpot Enterprises shareholder relations department.

<sup>20</sup>In order to keep a chain store as a long-term customer, slot route operators will renegotiate a lease before it expires by offering a higher rent. In the process the lease is extended but the costs of operating at those locations is increased.



the business. This split is usually a 60-40 percent split, with 60 percent going to the establishment and the rest to the slot route operator.<sup>21</sup> However, the percentage usually changes if a slot route operator has made a loan to the business. The more money the slot route operator loaned the business, the higher percentage of revenue the slot route operator will take from the establishment.

Most businesses use slot route operators because of the efficiencies they produce. Otherwise, compliance cost of a firm trying to enter this market would be high. Furthermore, a firm would lose revenue during the period it is securing a license. Also, the time and effort managing gaming operations would likely impose increased inefficiencies and deter specialization from the companies main business endeavors.

#### B. Firm Size and Structure of Nevada's Slot Route Industry

The slot route industry is structured as an oligopoly. The four biggest firms control over 70 percent of the market. United Gaming, Jackpot Enterprises, International Gaming Technology (IGT) and Electronic Data Technology (EDT) are the primary players in this market. The four firms are in control of 11,699 (75.8 percent) out of 15,434 slot machines operating

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<sup>21</sup>The figures were obtained through the interviewing of several bar owners in the Las Vegas Valley.

with a restricted license in operation as of June 30, 1991.<sup>22</sup>

The major player in the slot route industry is United Gaming. The company, through its subsidiary United Coin, holds a 35.12 percent [5,420 out of 15,434 total slots in the industry] of market share.<sup>23</sup> United Gaming has been a major player in the market since the late 1960's. From 1986 to 1991, United Gaming almost doubled the amount of outstanding slots from 2,840 to 5,454.<sup>24</sup> This increase is compared to a total of 50 percent growth in the number of restricted slots statewide. Of these 5,454 slots, 3,990, (73.2 percent), were at revenue-sharing locations and the rest at space-lease locations.<sup>25</sup>

Another strong operator IGT, and its subsidiary EDT have the next largest share of the market, 22.61 percent.[3,490 of 15,434 total slots in the industry].<sup>26,27</sup> The breakdown of the machines into revenue sharing and leasing is not disclosed

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<sup>22</sup>U.S., SEC, Jackpot Enterprises, Form-10K, p. 5; U.S., SEC, International Gaming Technology, Form-10K, p. 16; U.S., SEC, United Gaming, Form-10K, p. 15; U.S., SEC, Electronic Data Technologies, Form-10K, p. 10.

<sup>23</sup>U.S., Securities and Exchange Commission, United Gaming Form-10K, (Washington D.C.: GPO, 1991), p. 16.

<sup>24</sup>Ibid., p. 9.

<sup>25</sup>Ibid.

<sup>26</sup>IGT held close to 45 percent of EDT stock and paid some of EDT expenses. EDT was a subsidiary of IGT until 1987 when IGT sold over 50 percent of its stake in the company.

<sup>27</sup>U.S., Securities and Exchange Commission, International Gaming Technology, Form-10K, (Washington D.C.: GPO, 1991), p. 7.

by the company.

Jackpot Enterprises is another major player in the market with 18.07 percent [2,787 of 15,434 total slots in the industry].<sup>28</sup> Jackpot obtained 78 percent, of its revenue from lease and sublease agreements according to its 1991 10K.

The following table summarizes the key market share information for the Nevada slot route industry.

TABLE 1  
NUMBER AND PERCENTAGE OF SLOT MACHINES FOR  
NEVADA SLOT ROUTE FIRMS, 1991

Firm	Number of Machines	Percentage
United Gaming	5,420	35.12%
IGT and EDT	3,490	22.61%
Jackpot Ent.	2,787	18.07%
Others	3,737	24.20%
Total	15,434	100.00%

Source: U.S., SEC, International Gaming Technology Form-10K, p. 16; U.S., SEC, Electronic Data Technology, Form-10K, p. 10; U.S., SEC, United Gaming, Form-10K, p. 15; U.S., SEC, Jackpot Enterprises, Form-10K, p. 5. Nevada, Gaming Commission, "Quarterly Report, June 30, 1991."

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<sup>28</sup>U.S., SEC, Jackpot Enterprises, Form-10K, p. 12.

### C. Estimation of the Herfindahl-Herschman Concentration Ratio

The Herfindahl-Herschman Index, referred to as HHI, is a measure of industry concentration. It is calculated by squaring the market shares of each firm in the industry and adding the squared shares of the firms in the industry. The computed HHI can then be compared to the number the United States Department of Justice designates as to level of concentration of the slot route market.

The Department of Justice publishes general guidelines as to what is considered a highly concentrated market.

The Department divides the spectrum of market concentration as measured by the HHI into three regions that can be broadly characterized as unconcentrated (HHI below 1000), moderately concentrated (HHI between 1000 and 1800), and highly concentrated (HHI above 1800). An empirical study by the Department of the size dispersion of firms within markets indicates that the critical HHI thresholds at 1000 and 1800 correspond roughly to four-firm concentration ratios of 50 percent and 70 percent.<sup>29</sup>

Calculation of the HHI with IGT and EDT are taken as a single entity and is as follows:

$$(3.1) \quad HHI = (35.12)^2 + (22.61)^2 + (18.07)^2 = 1,869.$$

According to the Department of Justice, this industry would be considered highly concentrated because the HHI exceeds

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<sup>29</sup>U.S., Department of Justice, Antitrust Division Manual (Washington D.C.: GPO, 1987) sec. II, p. 133.

1,800.<sup>30</sup> A major factor which would influence the ratio is the definition of the market. If all gaming firms were to be considered, this ratio would be smaller because the largest firms hold only a small market share.

Other firms in the slot route market include Anchor Coin and Bally Manufacturing. Including these firms in the analysis would reduce the HHI coefficient. However Anchor Coin is a privately held company, its financial statements are not publicly available. Also, Bally Manufacturing did not disclose any of their slot route operations statistics in their financial reports to the Securities and Exchange Commission.<sup>31</sup> But in talks with Jackpot and IGT shareholder relations departments, they conservatively estimated that the two firms have at least 1,200 slot machines between them.<sup>32</sup> At these numbers the HHI coefficient would be less than 1,800; nevertheless, the available information is sufficient to reach the conclusion that economic concentration is present.

The geographic dispersion of the firms is limited. The firms are located in the two areas where the bulk of the population of the state live, Las Vegas and Reno. Jackpot, United Gaming, and Electronic Data Technology are headquartered in Las Vegas, and IGT is in Reno. Nevertheless,

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<sup>30</sup>Ibid.

<sup>31</sup>U.S., SEC, Bally Manufacturing, Form-10K.

<sup>32</sup>Lauren Watson, interview by author, Las Vegas, Nevada, October 1991.

all have offices in other cities where they do business, that is, United Gaming and Jackpot have offices in Reno, and IGT has an office in Las Vegas.

Most of the revenue for the industry is generated in the urban areas of the state. But the slot route operators do serve small towns. The rural sites are usually serviced from Reno and Las Vegas. For example, Laughlin and Mesquite are serviced from the Las Vegas and similar range hold for Reno.

#### IV. SLOT ROUTE FIRM CONDUCT AND STRATEGIES

Since all the slot route operators have leases on which their revenue are based, they capture market share by being aggressive in acquiring leases. This is done by offering a more generous revenue split or by increasing the amount of rent paid to the lease locations. The firms may also seek new locations to place their machines. This includes newly opened establishments or other businesses that previously did not have slots.

IGT and its subsidiary, EDT use technology that was developed for IGT's casino customers to differentiate their products. EDT developed what is called Megabucks for casinos throughout Nevada. Megabucks is a multilocation progressive slot machine system. This system links slot machines in different locations into a progressive system in which a jackpot increases incrementally with each bet. Although other slot route operators have progressive machines, they are limited to one particular location. The IGT Megapoker, like the Megabucks, links all locations that desire the service. This multilocal linking allows jackpots to begin at high levels (\$20,000) and to progress at a more rapid rate. The jackpot is won by getting a royal flush in sequence: an ace to a ten. Since jackpots are higher, customers will prefer to

play these machines more frequently, other things being equal, than machines which are not linked. Locations that have Megapoker generally have a banner outside the location announcing the presence of the system.

IGT is also the largest manufacturer of slots in Nevada. The company estimates that their market share for new slots in Nevada is over 70 percent. IGT asserts that their machines are among the most attractive and popular.<sup>1</sup> Since many of the machines are also located in casinos, familiarity with the product is also important.

United Gaming, through its subsidiary United Coin, also tries to differentiate its product. United Gaming, like IGT, also manufactures its own slot machines. But United Gaming has not been as successful as IGT in selling slots to third parties.<sup>2</sup> Among the reasons for this lack of success is the competition United Gaming has faced from IGT and its lack of commitment to the market. United Gaming is the largest slot route operator in Nevada with a long history in the business.<sup>3</sup> Most of United Gaming's slots, 3,990 out of 5,454, are in revenue-sharing locations.<sup>4</sup> United Gaming was successful in obtaining a large part of this market by being very aggressive

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<sup>1</sup>International Gaming Technology, "Annual Report," 1991.

<sup>2</sup>United Gaming now only manufactures slot machines for its own use. U.S., SEC, United Gaming Form-10K, p. 17.

<sup>3</sup>Ibid.

<sup>4</sup>Ibid., p. 6.



in getting individual locations. One of the ways they developed this market was by lending money to establishments to assist in their opening, thereby giving United Gaming a new client. This type of lending has enabled United Gaming to attract clients that might have gone elsewhere. As of June 6, 1991, the amount outstanding of these loans was close to \$9 million.<sup>5</sup>

The last large market player is Jackpot Enterprises. "Generally Jackpot subleases or leases space in stores which are part of a chain of stores."<sup>6</sup> Jackpot believes that the chain stores are greater volume locations. As a consequence of the greater foot traffic there is a higher likelihood the machines will be played. But there is an inherent risk in concentrating on leasing space from a chain store. When one acquires the right to place machines at a chain store locations in Nevada, the slot route operator must purchase enough machines to place in all the stores if enough machines are not in inventory. If a chain store has 15 locations, the need is for 225 machines. The risk comes into play when the lease nears its expiration. If Jackpot is not able to renew the lease, a large number of machines come off line causing revenue to drop considerably. The company then has a large inventory of unused slots. However, Jackpot has been

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<sup>5</sup>U.S., SEC, United Gaming, Form-10K, p. 17.

<sup>6</sup>U.S., SEC, Jackpot Enterprises, Form-10K, p. 4.

successful in not allowing this adverse impact to occur. Jackpot has been successful in renegotiating leases before contract expiration. The credit worthiness of the firm is also pivotal in the lease process. Most chain stores want to be reasonably assured that the rental agreement will be honored. Since Jackpot has an excellent history in its lease arrangements, chain stores have tended to favor this operator.

Many of the slot route operators have also tried to increase revenues by purchasing or building casinos. IGT owns and operates hotel casinos in Sparks and Hawthorne, as well as riverboat gaming on the Mississippi in Iowa.<sup>7</sup> Jackpot Enterprises also owns and operates casinos in Battle Mountain, Nevada, and Deadwood, South Dakota. The company's Deadwood properties are not profitable though Jackpot will soon expand into riverboat gaming in the vicinity of Memphis, Tennessee.<sup>8</sup> United Gaming also owns a casino in the Reno/Sparks area according to its 1991 Form-10K. All the companies' expansions into the traditional casino business face stiff competition. They will only be marginal players in this market. Furthermore, expansion in current slot markets faces growth opportunities limited by population growth and new business development. Not surprisingly, these firms have chosen to

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<sup>7</sup>U.S., SEC, International Gaming Technology, Form-10K, p. 3.

<sup>8</sup>U.S. SEC, Jackpot Enterprises, Form 10K, p. 8.

enter the casino business in other states in order to grow.

## V. FINANCIAL PERFORMANCE OF SLOT ROUTE FIRMS

Less competitive industries generally tend to have more profitable companies. However, some economic profits can be spent by managers for other "objectives, including growth, grandeur, an easier life (and) avoidance of risk."<sup>1</sup> Of course, these non-profit maximizing activities tend to be corrected in the long-run. Yet, firms in a non-competitive industry may not be earning monopoly profits in the short-run given the above conditions. These issues aside, financial measures offer useful evidence for evaluating an industry's performance.

### A. Estimates of Return on Equity

One way to judge the performance of a company is by its return on equity. The discussion of return on equity will be restricted to United Gaming and Jackpot Enterprises because most of IGT's sales were slot machines themselves, and not slot route operations, and IGT also paid some of EDT's expenses.<sup>2</sup> Therefore EDT's data is not a fair representation

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<sup>1</sup>William G. Shepherd, The Economics of Industrial Organization (Englewood Cliffs, N.J.: Prentice-Hall, Inc., (1979), p. 378.

<sup>2</sup>U.S. SEC, International Gaming Technology, Form-10K, p. 5.

of profitability.

The profit rates for the Jackpot and United Gaming decreased markedly since 1989 as shown on Table 2. Around the same time, a large expansion occurred in the number of slot machines in the industry. This was at a time when the slot route operators expanded into casinos, which adversely affected profits. One problem with return on equity measure is that they fail to account for debt/equity ratios. That is, the return on debt and the firm's risk are not addressed. Therefore, Tobin's q and Jensen's coefficient are introduced in the following sections of this study.

TABLE 2  
ESTIMATED RETURN ON EQUITY FOR  
TWO NEVADA SLOT ROUTE FIRMS  
IN PERCENT, 1990-1991

Firm	1991	1990
Jackpot Ent.	7.8%	13.3%
United Gaming	(-49.6%)	9.1%

Source: U.S., SEC, Jackpot Enterprises, Form-10K, p. 20; U.S., SEC, United Gaming, Form-10K, p. 22.

#### B. Estimates of the Return on Assets's Using Tobin's q

The following is the formula for the calculation of Tobin's q:

$$(5.1) \quad \text{Tobin's } q = \frac{\text{market value of assets}}{\text{estimated replacement costs}}$$

"The numerator of the  $q$  includes all the firm's debt and equity securities, and not just its common stock. The denominator includes all assets, not just the firm's net worth."<sup>3</sup> This ratio generally means that the ratio would be near 1 for competitive firms and higher than 1 for the less competitive markets. As markets become less competitive, assets earn a higher return and this pushes the  $q$  ratio above one. "A ratio above unity in the absence of barriers to entry would attract new entrants, driving  $q$  down in the direction of unity as the excess returns were driven to zero. On the other hand, a monopolist protected by barriers to entry would experience market capitalization of any monopoly rents. The market value of the firm would exceed its replacement cost and  $q$  would persist above unity."<sup>4</sup> As a result, the  $q$  then can be used as a proxy for monopoly power.

In using this ratio several problems exist. The first problem is determining the replacement costs of the assets. Since the majority of the slot companies' assets are gaming equipment, the assets will be valued at cost. This is done because, as gaming has proliferated throughout the country and new gaming manufacturers have entered the market, prices for gaming equipment have softened. A second problem is the

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<sup>3</sup>R.A. Brealy, and S. Meyers, Principles of Corporate Finance (New York: McGraw-Hill, 1988), p. 60.

<sup>4</sup>Chen, K.C., G.L. Hite, D.C. Cheng, "Barriers to Entry, Concentration and Tobins  $q$  Ratio," Quarterly Journal of Business and Economics 28, (Spring 1989), p. 34.

fluctuating value of the price of the common stock of the companies.

The q ratios for the two companies were computed for 1991 highs and lows of the common stock, and an average q will be calculated. The q for IGT and EDT will not be calculated because the data is not in usable form. IGT's q will be high due to large growth in sales and profits in its gaming equipment sales division and not from its slot route. EDT had some assets paid for by IGT making the data unusable.

TABLE 3  
ESTIMATED TOBIN'S Q FOR TWO NEVADA  
SLOT ROUTE FIRMS AT HIGH AND LOW  
STOCK PRICES, 1991

Firm	High	Low	Average <sup>1</sup>
Jackpot Ent.	1.90	1.43	1.66
United Gaming	1.82	0.96	1.39

Note: <sup>1</sup>The average is computed as the mean of the high and low q values.

Source: U.S., SEC, Jackpot Enterprises, Form-10K, p. 20; U.S., SEC, United Gaming, Form-10K, p. 22.

The q ratio for Jackpot is above one for both high and low stock prices. This suggests there are some monopoly profits that the firm is capitalizing into its stock price. United Gaming's q has one observation approximately equal to one. This value suggests that it might be operating around the replacement costs of its assets and not enjoying monopoly

profits. Nevertheless, the average values for both firms are greater than one. Q ratios in the study by Chen, Hite and Cheng in show that industries with very high barriers to entry had an average q of 2.467.<sup>5</sup> And that all other group q's were not significantly different from one. Taking the two q's together, the data suggest that there is not that high a barrier to entry into the industry. The q ratios for the slot route industry do not fall into the high barrier group. But since the q's are on average above one, there is evidence that some monopoly profits are being capitalized. Yet, a study done by Smirlock in 1984 found a median q ratio of 1.69.<sup>6</sup> Thus, the slot route industry's competitiveness appears to be about average and economic profits do not seem significant.

C. Nevada Slot Route Operators Common Stock Return  
Adjusted for Risk Using Jensen's  
Performance Index

Jensen's performance index measures asset performance adjusted for risk. Based on the capital asset model, this index is identified as follows:<sup>7</sup>

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<sup>5</sup>Ibid., p. 47.

<sup>6</sup>Smirlock, M., T. Gilligan, and W. Marshall, "Tobin's q and Structure-Performance Relation," American Economic Review (December 1984), p. 1057.

<sup>7</sup>For a discussion of the measurement of stock and portfolio performance, including the Jensen performance index, see Robert C. Radcliffe, 2nd ed., Investments: Concepts Analysis, and Strategy (Glenview, Illinois: Scott, Foresman and Company, 1987), pp. 813-842.



(5.2)  $R(i,t) - RF(t) = A(i) + B(i)[RM(t) - RF(t)]$  , where

$R(i,t)$  = holding period rate of return on the  $i$ th asset at time  $t$ ;

$RF(t)$  = holding period rate of return on the risk free asset at time  $t$ ;

$RM(t)$  = holding period rate of return on the market portfolio at time  $t$ ;

$B(i)$  = the estimated beta for the  $i$ th asset; and

$A(i)$  = Jensens performance index.

If the values for the calculated  $A(i)$  are positive, the  $i$ th asset, in our case the slot industries firm's common stock outperformed the market adjusted for risk. If the  $A(i)$  is negative, the common stock under performed the market adjusted for risk. The  $B(i)$  coefficients, referred to as betas, were from Standard and Poors.<sup>8</sup> The betas were calculated by Standard and Poors using the five year stock price information and the Standard and Poors 500 hundred index. The market premium,  $[RM(t) - RF(t)]$ , is the difference between the return on the market and the risk free rate of return. The holding period rates of return for common stocks is dividends for the period plus capital gains as a percent of the beginning stock price.<sup>9</sup>

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<sup>8</sup>Standard and Poors Stock Reports Index, March 1992.

<sup>9</sup>See J.C. Francis and S.H. Archer, 2nd ed., Portfolio Analysis, (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1979), pp. 8-11 for formulas used here.

Negative Jensen coefficients were computed for 1990 for two slot industry firms, see table 4. This indicates that returns

TABLE 4  
Jensen Coefficients for Nevada  
Slot Route Firms Measured in  
Percent, 1990-1991

Firm	1990	1991
Jackpot Ent.	0.016	(-0.014)
IGT	0.255	0.567
EDT	(-3.262)	0.290
United Gaming	(-4.241)	(-0.480)

Source: Computed from Quotron, Citibank Data Services, New York.

adjusted for risk were below that of the market. For one firm, Jackpot Enterprises, the Jensen coefficient is near zero, indicating that the firm earned only a market rate of return. Only IGT outperformed the market when adjusted for risk. But as suggested previously, this performance largely reflects its slot machine manufacturing business. In 1991, the A(i) for Jackpot Enterprises was negative, indicating that the company under performed the market. Also the Jensen coefficient for United Gaming remained negative. On the other hand, the Jensen coefficients for Electronic Data Technology and International Gaming Technology were both positive. The reason behind Electronic Data's positive Jensen coefficient was that

International Gaming offered to purchase all of the remaining shares of EDT that it did not own. And International Gaming's Jensen coefficient again was positive because of the large growth in its gaming machine manufacturing business, and not its slot route division. These Jensen performance estimates indicate that the slot route industry has not outperformed the market adjusted for risk. Thus, the risk adjusted evidence points to a conclusion that monopoly profits have not been capitalized into the common stock prices of these companies.

## VI. DISCUSSION OF NON-COMPETITIVE ASPECTS OF THE SLOT ROUTE INDUSTRY

Unlike perfect competition and monopoly, oligopoly has no prevailing single theory to explain why some markets are structured with few firms. Yet, two dominant reasons offered for oligopoly are barriers to entry and economies of scale. These reasons and how they relate to the slot route industry are now discussed in greater detail.

### A. Barriers to Entry

"A barrier to entry may be defined as a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry."<sup>1</sup> An especially sizable barrier to entry in the slot route industry is the gaming license. Prior to entry into the gaming industry, individuals or firms must pass a strict gaming licensing process. As previously mentioned, this process costs a minimum of several thousand dollars to upwards of hundreds of thousands of dollars. This investigation involves the background checks of all applicants, including the applicants' personal and financial history. Many potential applicants do not wish to

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<sup>1</sup>George Stigler, Organization of Industry (Chicago: University of Chicago Press, 1968), p. 67.

subject themselves to this process, limiting the potential entrants. The outcome of the process is never certain, so the risk of spending large amounts of money and being deemed unsuitable for the license is another factor limiting the potential entrants. The application process for the gaming license also takes an extended period of time during which the applicant can not solicit potential clients.

#### B. Economies of Scale

"The economies of scale constitute the relationship between the size of a firm (or plant) and its costs of production in the broadest sense."<sup>2</sup> Generally firms tend to get more efficient as they grow because specialization of the work force, as well as other efficiencies, can develop. But there is a point at which the firm no longer gains in efficiency as it grows and may actually have a decline in efficiency. This is the point of diseconomies of scale. This point leads to the theory that there exists an optimal firm size in each industry.

In the slot route industry, the company with only a few locations might have the nightshift employees who have very little to do. But they must be there because of the twenty-four hour nature of the business and because of competitive pressure to do so. But as the firm's routes grows, specialization of the work force can occur. The

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<sup>2</sup>Ibid.

distribution of coins and the maintenance of the machines can become separate increasingly efficient tasks. The firms that control most of the market share in the slot route industry achieve these efficiencies. The firms also can have a specialized administration which can deal in the payment of gaming taxes, (most counties differ in gaming tax structures), or the counting of coins taken from the establishments.

Integration of a slot route operator and the supplier of slots has shown to be of no competitive advantage. International Gaming Technology produces its own slots for both itself and the rest of the gaming industry. IGT has been extremely successful in the manufacturing of slots, and that has been an asset to its slot route division. On the other hand, United Gaming also manufactures its own slots and has not had much success. Jackpot Enterprises purchases its slots from the producer that it thinks makes the best and most popular games. The effects of integration vary by firm, and any conclusions reached must be extensively qualified. Thus, conclusions would be of limited use.

#### C. Valuation of a Restricted Gaming License

One way to determine whether or not monopoly profits are being made is to compare how much the slot route locations sell for, and their actual asset value. At the end of January 1991, Jackpot Enterprises purchased the assets of Corral Country Coin, Inc. The total purchase price for the company

was \$1.656 million. Of that amount, only approximately \$321,000 was allocated for the purchase of tangible assets. The bulk of the purchase price, \$1.372 million, was for goodwill and intangibles. The goodwill and intangibles amounted to \$4,733 per machine or about \$71,000 per location assuming 15 machines per location. The substantial amount that was paid over what the assets were worth shows either that holding the gaming license produces some economics profits or that a bad decision was made. Nevertheless, the available evidence suggests that the incumbent firms hold a favorable market position.

## VII. CONCLUSIONS

One might expect the slot route industry to earn economic profits, but the firms do not. To be sure, the structure of the slot route industry as measured by the HHI is highly concentrated. Furthermore, the four major firms conduct themselves so as to differentiate their products. However, slot route firms' Tobin's  $q$  and Jensen coefficient indicate they do not outperform other markets. That is, there was no significant evidence of economic profits found.

Some accounting for the lack of economic profits is through industry consolidation. As firms in the slot route industry are purchased, any monopoly profits that are present are capitalized into the purchase price. This helps explain why Jackpot Enterprises would pay close to \$5,000 per slot machine above the asset value of a purchased slot route operator.

High concentration and the lack of evidence of economic profits may be expected in the face of competition from casinos. Casinos are much larger than the slot route operators and, they offer a more diversified gaming product. Moreover, casinos generate much more revenue than slot route operators. The slot route operators have approximately one-ninth the number of slots as the casinos. The slot route industry is a secondary market in the Nevada gaming industry



operating where the large casinos choose not to. Thus, the reason that the slot route industry did not create the amount of economic profits one might expect is largely inherent in the definition of the slot route industry.

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