Malcolm Wiener Center for Social Policy

The Economics of Bingo:
Factors Influencing the Success of Bingo Operations
On American Indian Reservations

by

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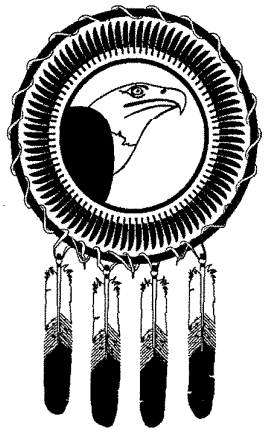

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American Indian Economic Development

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Executive Summary

In the last decade a significant number of American Indian Tribes have adopted one or another form of gaming as a central element in their economic development strategies. As a consequence of the unique sovereign status of Indian tribes, Bingo and certain other forms of gaming in most cases are virtually free of state legislation. This has led to large stakes gaming operations and, in some cases, large profits as well.

However, Indian bingo operations have not been uniformly successful. This paper examines certain factors which may influence success and failure of bingo operations on Indian reservations.

Using regression techniques and 1986-1987 revenue data from the bureau of Indian affairs, this paper attempts to measure the impact of non-reservation population and income, and the location and organization of the bingo operation, on gaming revenues.

The analysis reveals that the most important variables affecting success are the size of non-reservation populations within a fifty mile radius of the bingo operation and the presence/absence of competing gaming operations. The impacts of other variables are less clear. An additional finding of interest is that the nature of management group -- whether tribally operated or non-tribal operated -- is of less importance, however, the relationship of the tribal government to the management group, (whether Indian or non-Indian) appears to play an important role in the success of the operation.

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Chapter I
Introduction

I. Introduction

American Indians, as a group, lag severely behind the economic standards of the rest of the United States. Among Indian tribes in South Dakota for example, the average unemployment rate hovers around 44 percent, reaching highs of 70 and 80 percent. The per capita incomes of these tribes are usually between $2,100 and $2,800. This figure is substantially lower than the nation's poverty level, currently around $14,000. More than 50% of the Indians on reservations live in poverty.[1]

In recent years a number of tribes have taken up bingo and other forms of gaming as a development strategy. In 1987 the Bureau of Indian Affairs estimated that the Indian bingo industry includes 113 separate tribes in the United States. The total estimated gross revenue amounted to approximately $225 million dollars. In Florida, the Seminole Indians, who started using bingo to generate revenue in 1979, currently run four separate bingo operations which grossed an estimated $45 million dollars in one year alone. As a result of the Seminoles' success with bingo, their reliance on Federal funds dropped dramatically. The percentage of their tribal budget received from the government fell from 60 percent in 1977 to 20 percent in

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[1]Pommersheim, Frank. "Economic Development in Indian Country: What are the Questions?" American Indian Law Review. p. 195.

1984.[2] Similarly, in 1986, the Tulalip tribe of Washington state was able to gross $15 million dollars through a single bingo operation -- just a year and a half after its start-up. In Minnesota, the Prior Lake Indians have averaged 25,000 players per month, and were able to pay off the $1 million debt on their bingo facility in only nine months of operation.[3] Table 1 gives a summary of bingo revenues for Indian tribes for 1986-1987, the most recent year for which BIA data was available.

Indian bingo differs from other, more commonly known forms such as non-profit and church bingo. State governments have the power to decide whether non-Indian bingo operations will be permitted in the state. In addition, the states have the authority to regulate the operation of these games. This includes deciding which days the bingo halls are open, the number of people who can play, and the size of the jackpots awarded. Most states that allow bingo as a form of revenue limit the awards that can be given out from $100 to $250. The distinct legal situation of Indian tribes, however, and in particular their sovereign statue vis-a-vis the states, allows them to legally circumvent these regulations.

In the 1800's, the Federal Government became concerned that Indians were not assimilating into the non-Indian community and that non-Indian settlers were fraudulently obtaining Indian lands. Accordingly, the Federal Government took

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[2]McGregor, James. "High Stakes Bingo Games Flourishing on Reservation." Las Vegas Review Journal. 4 November 1984. p. 16E.

[3]McGregor, p. 16E.

Table 1

Summary of Bingo Revenues July 1986-June 1987

Organized by BIA Area Office

Tribe	Location	Bingo Revenue
	ABERDEEN AREA OFFICE	
Turtle Mountain	Belcourt, ND	$60,000
Flandreau	Flandreau, SD	$474,083
Yankton	Wagner, SD	$800,000
Sisseton	Watertown, SD	$2,648,000
	ALBUQUERQUE AREA OFFICE	
San Juan Pueblo	San Juan Pueblo, NM	$100,000
Isletta Pueblo	Isleta, NM	$100,000
Sandia Pueblo	Bernalillo, NM	$1,000,000
	ANADARKO AREA OFFICE	
Iowa (OK)	Perkins, OK	$120,000
Kaw	Kaw City, OK	$226,428
Iowa (Kansas)	Hiawatha, KS	$365,000
Cheyenne-Arapaho	Watonga, OK	$376,000
Citizens Band Potawatomi	Shawnee, OK	$600,000
Otoe-Missouria	Red Rock, OK	$1,200,000
	BILLINGS AREA OFFICE	
Blackfeet	Browning, MT	$150,000
Northern Cheyenne	Lame Deer, MT	$189,381
	EASTERN AREA OFFICE	
Pequot	Ledyard, CT	$10,000,000
Cherokee	Cherokee, NC	$10,000,000
Seminole	Brighton, FL	$5,000,000
	Big Cyprus, FL	$10,000,000
	Hollywood, FL	$15,000,000
	Tampa, FL	$15,000,000

MINNEAPOLIS AREA OFFICE

Hannahville Community	Wilson, MI	$250,000
Stockbridge Munseee	Bowler, WI	$250,000
Red Cliff Band	Bayfield, WI	$250,000
Bad River	Odanah, WI	$250,000
Forest Potawatomie	Crandon, WI	$250,000
Bay Mills	Brimley, MI	$1,000,000
Wisconsin Winnebago	Tomah, WI	$1,000,000
Saginaw Chippewa	Mt. Pleasant, MI	$1,000,000
White Earth	White Earth, MN	$1,200,000
Grand Traverse Band	Suttons Bay, MI	$5,000,000
Lac Courte Oreilles	Hayward, WI	$5,000,000
Keweenaw Bay Community	Baraga, MI	$5,000,000
Leech Lake	Cass Lake, MN	$5,000,000
Menominee Indian Tribe	Keshena, WI	$5,000,000
Red Lake Band of Chippewa	Red Lake, MN	$5,000,000
Sault Saint Marie Tribe	Sault Saint Marie, MI	$5,000,000

MUSKOGEE AREA OFFICE

United Keetowah	Tahlequah, OK	$100,000
Thlotpthlocco Creek	Clearview, OK	$125,276
Quapaw	Quapaw, OK	$240,000
Chickasaw	Sulphur, OK	$175,598
	Ada, OK	$635,592
Creek	Bristow, OK	$571,352
	Okmulgee, OK	$1,126,088
	Tulsa, OK	$15,802,123

PORTLAND AREA OFFICE

Tulalip	Marysville, WA	$15,000,000

SACRAMENTO AREA OFFICE

Bishop Tribe	Bishop, CA	$300,000
Hoopa Tribe	Hoopa, CA	$700,000
Robinson Rancheria	Nice, CA	$2,400,000
Barona Band	Lakeside, CA	$3,000,000
Santa Ynez	Santa Ynez, CA	$4,000,000
Santa Rosa Rancheria	Lemoore, CA	$5,300,000
Soboba Band	Hemet, CA	$11,000,000
Morongo Band	Banning, CA	$24,000,000

Source: BIA Survey of Indian Bingo Activity

AREA ORGANIZATION--BUREAU OF INDIAN AFFAIRS

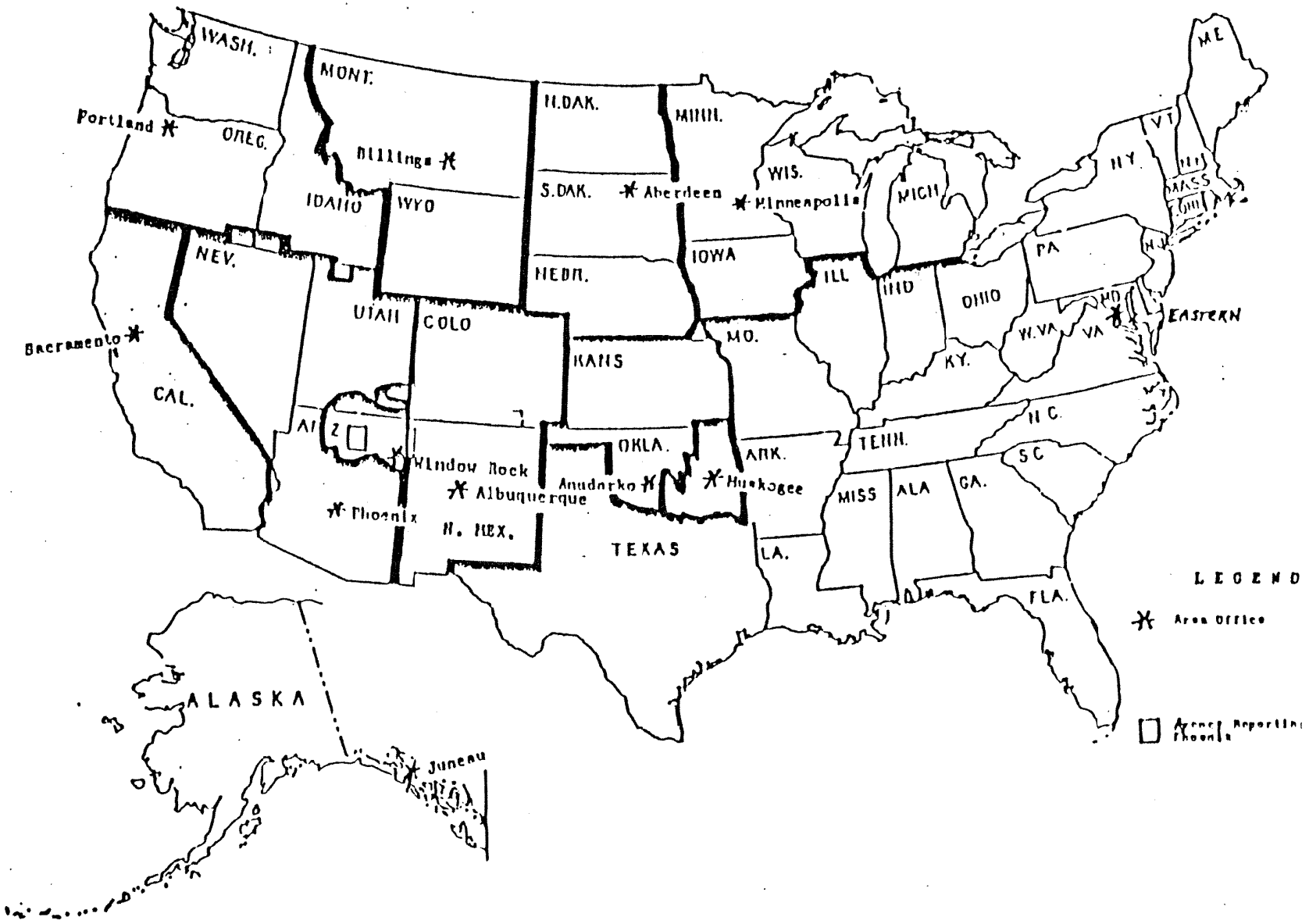
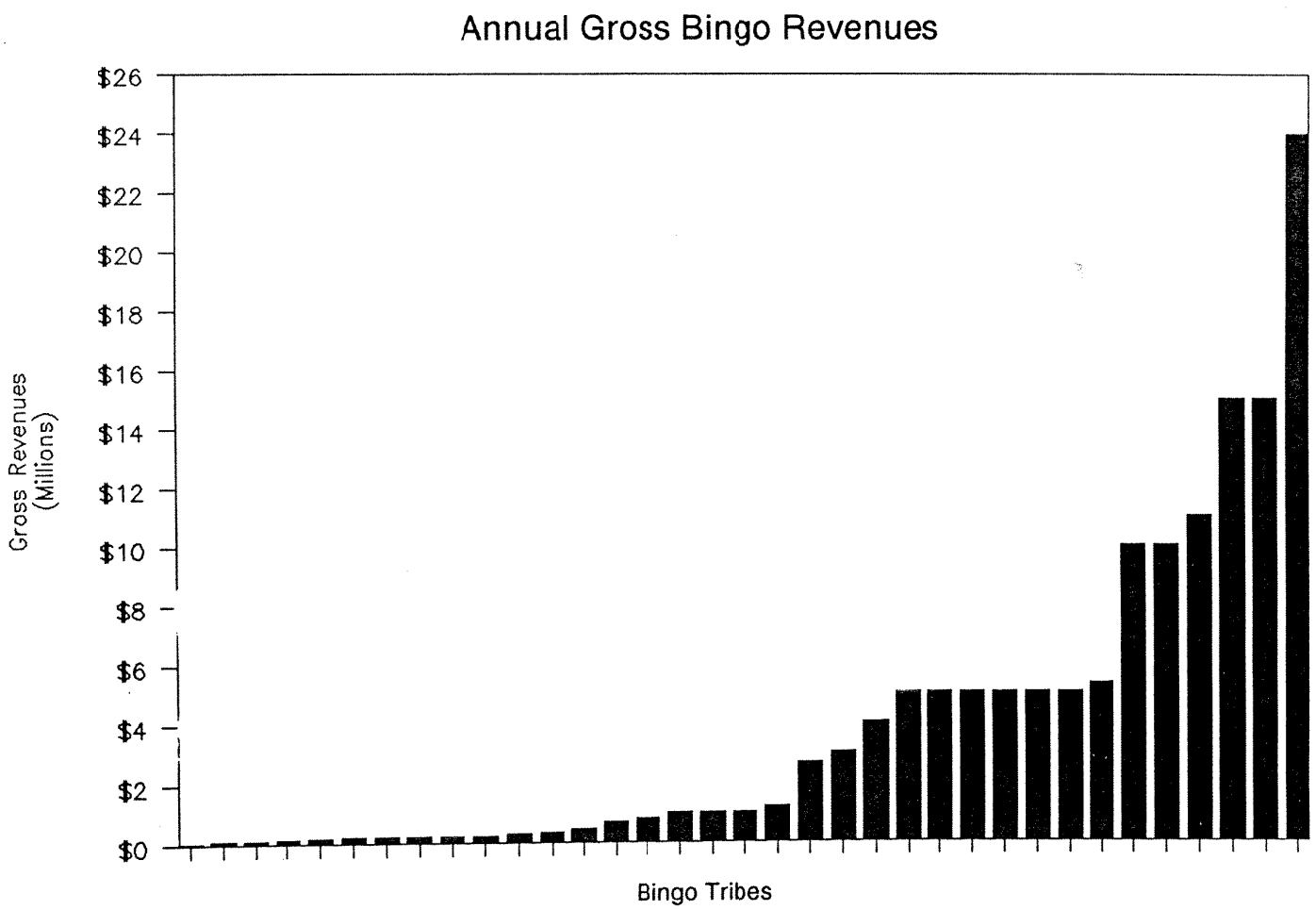


Figure 1



SOURCE: BIA Survey on Indian Bingo Activity, July 1, 1987

control of Indian lands, and to this date, hold them in trust for the Indians. The reservation land, then, is in effect Federally owned and does not belong to the state.[4]

How does this apply to Indian Bingo? As a result of this trusteeship, Indian tribes retain substantial civil regulatory power on their reservations regardless of state law. This does not mean that they are allowed to create their own law; rather, they are allowed to regulate reservation activities within limits set by the laws of the state. For example, in the state of Florida bingo operations are legal, whereas casino operations are not. An Indian tribe in Florida is not allowed to open a full casino with black jack, roulette and poker, but is permitted to open a bingo hall and regulate its jackpots. Thus, one can play bingo at the Seminole tribe in Florida with the hope of winning anywhere from $50 to $2000 per game. While some of these winnings may seem trivial, Indian mega-jackpots can reach as high as $250,000 to $1,000,000.[5]

Given these enormous potential winnings, one can see why Indian bingo has become such an attractive "pastime", and one can see the potentially huge revenues for bingo tribes. Following the examples set by the Seminoles, the Pequots, and the Tulalips, many Indian tribes have attempted to use bingo as a development tool. However, some tribes are not doing as well as others. In fact, there are several tribes whose bingo operations have folded within a short time of inception.

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[4]Letter from Joel Starr, Assistant to Secretary Swimmer, Bureau of Indian Affairs, dated August 1988.

[5]McGregor, p. 16E.

This fact and related phenomena raise important questions of political, social and economic interest. What gaming operations are working, where, and why? Why are some tribes able to gross $10,000,000 while others only make $60,000 and still others are forced to fold? Are Indians taking money away from their non-profit competitors? Should the states have more regulatory power over the tribes? How are the profits contributing to the economic development of the tribe? That is, is the money being raised going to causes that will benefit the tribes, such as health care, education or capital investment, or are profits leaving the reservation and going into the pockets of non-Indian managers? Are Indians once again being exploited for their legal and regulatory status?

The focus of this paper is on the business and economic aspects of bingo. In particular: what are the underlying factors that contribute to the success or failure of a bingo operation? These factors can be broken down into three separate categories. The first comprises market variables: population density, income, and related factors which serve to create the supply and demand for a given good, in this case bingo and the revenues that sustain it. The second category includes organizational factors that influence the type of bingo operation. How, organizationally do Indian bingo tribes differ? The third category includes tribal capacity variables. These describe different tribes' capabilities in operating businesses, including bingo. The purpose of the analysis is to provide tribes with information useful in making decisions about bingo as a development strategy.

Chapter II
An Overview of Gambling Activities

II.A. Gambling in the United States

When asked to characterize the stereotypical image of gambling, many Americans would probably describe the glamorous casinos of Las Vegas, Atlantic City, and Monte Carlo, where gamblers play exotic games such as roulette, black jack, and craps for huge stakes that often rival a year's pay for the average working American. The image that most Americans hold of gambling is that of the "big time" casinos. This image, however, for the most part, is a romantic fantasy rather that a true representation of gambling activity in the United States. In truth, gambling in the United States includes not only casino gambling, but also state lotteries, pari-mutuel betting, illegal games, and bingo. While more money is spent on casino gambling than on any other single form of wagering, the total monies bet at casinos in the United States amount to only 25 percent of all wagers made in 1983.[6] A breakdown of the gross wagers for 1983 in the United States can be found in Table 2.

Americans bet on everything from professional sporting events to horse and dog races to amateur sports, both major and minor, to a round of golf or a game of

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[6]Abt, Vicki, Smith, James F. and Christiansen, Eugene Martin. The Business of Risk. p. 224.

Table 2

Breakdown of Gross Annual Wagers for the United States

1983

Game	Gross Wager	Operator Revenues	Revenues Gross Wagers
Casino Gaming	$107,510,000,000	$4,609,000,000	0.049
State Lotteries	$5,600,000,000	$3,024,000,000	0.540
Pari-mutuel Betting	$14,593,816,410	$2,825,000,000	0.194
Bingo	$3,070,000,000	$798,000,000	0.260
Charitable Gaming (Excluding Bingo)	$1,400,000,000	$464,000,000	0.033
Legal Bookmaking	$825,344,925	$43,513,799	0.053
Card Rooms (Excluding Nevada)	$1,052,000,000	$52,000,000	0.045
Illegal Gambling	$28,890,000,000	$5,027,000,000	0.174
Grand Total:	$162,968,000,000	$16,843,000,000	

Source: Abt, Smith and Christiansen The Business of Risk

one-on-one basketball. Since some of the major forms of gambling are illegal in many states, insistent Americans have been forced to bet underground. Illegal gambling activities range from betting with bookies to "back room" games that offer types of entertainment similar to the big time casinos. Illegal games have other advantages in that they are sold at "places of business or even door-to-door" and they are fully tax free.[7] Thus, gambling in America is a bigger part of everyday life than one might first imagine.

In 1983, more that $107.5 billion was spent on casino gambling in the United States. This is a remarkably high figure considering that it is legal in only two locations in this country--Nevada and Atlantic City, New Jersey. Casino gambling is separated from other forms of gambling because of the variety it offers the willing bettor. Casinos have everything from the traditional card games to American craps, Chinese lottery, pari-mutuels, and slot machines. Today's casinos are providing more and more games as well as other types of entertainment to attract a broader variety of people. A major allure of the casinos is the glamour aspect: people are forever drawn to the large sums of money that change hands in casinos. Moreover, the games are easily comprehensible to the beginner. While the casinos are very profitable, they have not spread throughout the nation, mostly due to their social costs. The major arguments against casinos concern their association with alcohol, prostitution and organized crime. For these reasons, voters have repeatedly turned

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[7]Kaplan, H. Roy. "The Social and Economic Impact of State Lotteries." The Annals of the American Academy of Political and Social Science. July, 1984. p. 101.

down the proposition of casino gambling in states such as Florida and Illinois.[8] In a report on national policy, the Commission on Gambling recommended that the legalization of casino gambling should be restricted to the less populated regions of the country where its adverse social effects on the surrounding community would be minimized.[9]

Pari-mutuel wagering, another form of gambling, garnered $14.6 billion in bets in 1983. Pari-mutuels were invented in France in the late 19th century in protest against fixed horse races. Essentially, pari-mutuels wager against themselves, as opposed to wagering against the house; the odds are created by the bettors and, therefore, cannot be fixed by the bookmakers. For the most part, the objects of pari-mutuels are sporting events such as horse racing, dog racing, and jai-alai.

Recently, state lotteries have been receiving the most attention among the major forms of gambling. Today, they are legal in twenty-eight states, and in 1983 $5.6 billion was wagered on them. In 1964 the modern state lottery was introduced in New Hampshire. Yet lotteries played a major role in the early development of the United States. The Virginia Company used lotteries to help finance the development of the Jamestown colony as well as for funding frontier wars, churches, and colleges (including Harvard and Yale).[10] Lotteries are popular because they are

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[8]Abt, Smith and Christiansen. p. 78.

[9]Commission on the Review of the National Policy Toward Gambling. Second Interim Report. July 1976. p. 49.

[10]Kaplan, p. 91

considered a benign form of gambling that is a useful source of raising revenue. However, due to large overhead, they do not raise as much money as one might expect: it is estimated that lottery revenues account for only 2 to 3 percent of annual state revenues.[11] In addition, because the poor participate disproportionally in lotteries, many claim that they are merely a highly regressive tax that affects those people who can least afford it.

By 1983 some form of bingo had been legalized in 45 states and approximately $3.1 billion had been wagered. Despite this fact, some people do not view bingo as "gambling" due to the minimal amounts of money that can be won or lost on a single wager. It remains a heavily regulated form of gaming in this country. In some cases, bingo licenses are granted exclusively to non-profit organizations in which the amounts of the jackpots are extremely limited.

Clearly, with wagers totaling almost $163 billion in 1983, and operator revenues nearing $17 billion, gambling in the United States does more than provide entertainment and recreation -- it is a big business.

II.B. Gaming on the Reservation

People often refer to gambling activities on the reservation as "Indian gaming." In fact, gaming and gambling are almost perfectly interchangeable, as gaming is defined as the act or practice of gambling. Gambling on the reservation is almost

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[11]Kaplan, p. 99.

exclusively one game--BINGO. The Oneida tribe of New York state opened the first Indian bingo operation in 1975. In 1979, the Seminole Indian tribe of Florida, backed by a group of non-Indian investors, started the nation's first big-stakes bingo operation, in Hollywood, Florida. Big-stakes gaming, in the form of bingo, has been flourishing on the reservations ever since.

The primary factor behind the emergence of Indian bingo is tribal sovereignty. In recent years, the United States Supreme Court has ruled favorably for the tribes and bingo. In the last three years, the courts maintained that:

> Tribes retain the right to regulate gambling unless statutes that transfer criminal jurisdiction to States or that assert Federal criminal jurisdiction over State offenses committed on Indian reservations apply to gambling. Courts have held, however, that those laws apply only if a State altogether prohibits the gambling activity, not if it merely regulates the activity.[12]

Thus, if an activity is legal in the state, it is legal everywhere in the state, including on the reservations; furthermore, the tribes themselves are allowed to regulate civil activities on their land. The reservations are free from virtually all the regulatory burdens faced by outsiders; this can translate into big profits for the tribes. As a result of the regulatory haven that has been created on the reservations, Indian tribes have a comparative advantage in bingo. They have found a niche in the market and have been able to capitalize on it.

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[12]Jones, Richard. "Gambling on Indian Reservations," Congressional Research Service Review. October 1986. p. 13.

Although sovereignty has given Indians regulatory advantages in the market, it might also be considered a detriment in attracting certain types of foreign capital. Those development efforts that concentrate on large-scale, capital-intensive investments oftentimes accumulate large sunk costs. The Indians' sovereign control over reservation affairs and their immunity from suit present investors with the added risk of *ex post* opportunism on the part of the Indian tribes.[13] *Ex post* opportunism describes a supplier's ability to take advantage of investors' sunk costs after the fact. Since sovereignty gives American Indians control over the affairs that take place on the reservation, *ex post* opportunism becomes a problem when large sunk costs are invested by non-Indians. Sovereignty and the instability of many tribal governments make American Indian reservations relatively risky places for outsiders to make non-salvageable investments.

In this light, bingo appears as a good economic development strategy for two reasons. First, there are few sunk costs involved in a bingo operation, and thus, the risk to outside investors of *ex post* opportunism is reduced. Although some tribes choose to build new facilities, other bingo halls are literally converted warehouses. The Fond du Lac tribe of Minnesota and the city of Duluth, for example, have proposed to convert a "vacant store" into a bingo hall.[14] Even now facilities have

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[13]Oliver Williamson offers a detailed explanation of the problems associated with *ex post* opportunism and sunk costs, and the use of hostages to deter opportunistic suppliers. Williamson, Oliver E. "Credible Commitments: Using Hostages to Support Exchange." The American Economic Review, September, 1983, p. 522.

[14]As the "vacant store" is off the reservation, this proposal is contingent on the Department of the Interior designating the store as reservation land. McGregor,

few of the capital requirements of, say, a manufacturing plant. Indian bingo, then, is more attractive to non-Indian investors because it is less risky. In addition, since it is not highly capital intensive, the tribes often need not worry about attracting outside capital at all. These are development ventures the tribes can (and in some cases do) take on by themselves.

Thus, the creation of a niche in the marketplace as a result of sovereignty and the fact that bingo is not highly capital intensive has fueled the evolution of bingo as a development strategy on Indian reservations. The Morongo tribe outside of Los Angeles, which opened a 1400 seat bingo hall in April 1983, provides an example of a thriving bingo operation on a reservation. In its first nine months of operation, the Morongos grossed over $300,000 and employed thirty-five members of the tribe.[15] Similarly, the Shakopee Sioux near Prior Lake, Minnesota, grossed $2.5 million in just one year of operation and were able to build a brand new 1300 seat auditorium.[16]

Although bingo has given life to some American Indian tribes in the form of tribal government revenues, the Federal Government is concerned about some of the consequences of the high-stakes bingo operations. Exploitation is high on the list of concerns expressed by the Federal Government. Most agreements between tribes and management groups give Indians 51% of the profits, but usually not much

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James, p. 16E.

[15]Andersen, Kurt. "Indian War Cry: Bingo." Time. 2 January 1984. p. 58.

[16]Andersen, p. 58.

more. Thus, while the tribes receive a majority of the receipts, it seems that they are paying a lot of money for management services.

Another concern regarding the consequences of high-stakes bingo is the possible destructive competition with traditional bingo: churches and non-profit organizations have argued that Indian tribes have cut into their proceeds with their new, better, and more lucrative brand of bingo.[17] Some charitable groups claim that the Yaqui tribe's bingo operation near Tucson, Arizona, has taken away 10% of their business in their first three months of operation.[18] These claims make high-stakes bingo a controversial issue.

Finally, a growing concern of the Federal Government is that gambling enterprises attract organized crime. Until recently, evidence of organized crime in the Indian bingo industry was non-existent. In February of 1989, however, a former associate of an organized-crime family testified that the "Mafia" had infiltrated no less than twelve high-stakes bingo operations.[19] The witness claimed that there were at least three Mafia families involved in Indian bingo operations using management fronts to skim money off the profits.

Gaming on the reservation, then, closely parallels gambling in the United States. Like the casinos that are legal in Nevada and Atlantic City, gambling on the

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[17]Harris, Art. "Bingo Madness!" The Washington Post. 26 May 1985. p. G1.

[18]Schmidt, William E. "Bingo Boom Brings Tribes Profit and Conflict." The New York Times, 29 March 1983, p. A1.

[19]McAllister, Bill. "Mafia Skimming Indian Bingo, Witness Testifies," The Washington Post. 9 February 1989. p. A3.

reservation is successful because it exercises a comparative advantage. Thanks to their legal status, Indian tribes maintain some control over the supply of high-stakes bingo. Non-Indians can participate in supplying this good, but only through arrangements with tribes. In fact, gaming is an attractive reservation investment for non-Indians -- it reduces the danger of *ex post* opportunism that accompanies other capital intensive investments on the reservation. However, like gambling in the United States, gambling on the reservation also has its externalities, a major one being organized crime.

Chapter III
A Model For Success

In considering the question of which bingo operations are working and, more specifically, why some are more successful than others, a framework can be constructed using tools developed from industrial organization and microeconomic theory.

From a microeconomic viewpoint, the analysis of the comparative success of Indian bingo operations is a question of examining the supply and demand for a particular good. In this case, the good is Indian bingo. From the foregoing discussion, we know that the suppliers of the good are limited to American Indian tribes; they have a virtual monopoly over the market. Thus, one may ask, what are the elements that influence demand?

In any market, there are at least four main factors that affect the demand for a good. One factor has to do with how many people are available to purchase the good. The demand for a good is almost unequivocally increased as the population surrounding that good becomes more dense. For example, Indian bingo can be expected to be in greater demand if there are 500,000 people in a given radius of the operation than if there are only 100,000 people in the same radius. Very simply, this holds because a greater number of possible buyers would yield a larger number of actual buyers: people who would show up to play the game.

A second factor that might influence the demand for Indian bingo is the amount of money that the people who live within a reasonable proximity of the reservation can afford to spend on the game. In most cases, the demand for a good will rise as people have more money to spend. Since bingo is not a necessity, one might predict that as a person had more money to spend on luxuries, the demand for high-stakes bingo would rise.

The price elasticity of demand for bingo is a third element that might affect the revenues of a bingo operation. A good is relatively elastic if it has many substitutes. At a given price, the demand for a good will be lower if there are many other similar goods in the market that can serve as substitutes. Although there are many forms of gambling in the United States, high-stakes bingo is unique to Indian reservations. Thus, competition should be measured against other Indian bingo operations, and not against other forms of gambling or other forms of bingo.

Finally, in analyzing the demand for a good, one must account for the tastes of the consumers. This poses the question of "given high-stakes bingo, will people be interested in playing?" This depends on the propensity for people to play Indian bingo. The propensity to bingo is a regional factor that may vary in different parts of the country.

Keeping in mind these four components that contribute to demand, and the monopoly power that American Indians have to maintain some control over supply, a model can be constructed to determine the factors that influence the comparative success of Indian bingo operations.

III.A. Defining Success

There are many indices that can be used to measure the success of an Indian bingo operation. One may choose to look at profits, sustainability, creation of employment, or size of the operation. All of these measures serve to indicate, in one way or another, the success of a bingo operation. In the model that will be introduced below, however, success is measured by the total revenue of the operation for the one year period beginning in July 1986 and running through June 1987. While net revenues (or profits) might be a better indicator of the success of a bingo operation, these figures are not available for analysis.

On this note, it is important to remember that substantial quantitative data on Native Americans and their economic development is scarce. Gathering data on bingo revenues is especially difficult for two reasons. On one the hand, these revenues are not recorded by the Internal Revenue Service and are not taxed. Consequently, there is no central source that keeps track of this information. On the other hand, attempting to gather information from the tribes themselves proves extremely difficult. In some cases the tribes do not have the data, while those that do are often suspicious of non-Indians asking questions -- especially questions concerning large sums of money.

The data for this analysis, then, consists of the total revenues of Indian bingo operations as gathered by the Bureau of Indian Affairs from a survey dated July 1, 1987. This survey was conducted through the regional offices of the BIA. Its accuracy, therefore, is highly dependent on the relationships that the BIA regional offices had with the tribes under their jurisdiction. For example, while it is known that there are six Indian bingo operations in the Phoenix Area, their revenues are unknown due to poor Area Office relations with the tribes. Conversely, strong tribal relationships with the Sacramento Area Office have provided a good deal of accurate data on bingo activity among the California tribes.[20]

Notwithstanding better indicators of success, such as net revenues, the use of gross revenues is justified in that one would expect these revenues to be positively correlated with other estimators of success such as the size of the operation and increases in employment.

III.B. A Framework for Analysis

The framework for analysis maintains that the gross revenues of the bingo operations are dependent upon a series of exogenous variables. These independent variables can be broken down into three distinct categories: the market variables,

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[20]Telephone conversation with Joel Starr, Assistant to the Secretary, Bureau of Indian Affairs. 3 March 1989.

the organizational variables, and the tribal capacity variables. The regression equation breaks down in the following manner:

$$\text{Total Revenues} = \alpha + \beta_1(\text{Market Variables}) + \beta_2(\text{Organizational Variables}) + \beta_3(\text{Capacity Variables})$$

The market variables are those economic factors that contribute to the demand for bingo. One market variable measures the density of the population surrounding the bingo operation. The number of people that live within a 25 and 50 mile radius of the bingo hall (**POP25** and **POP50**, respectively) were calculated to determine the density of the area surrounding each bingo operation. In deriving these figures, a circle was drawn, on a map, with a radius of 25 and 50 miles around the site of each bingo location. Any county whose borders fell within this radius was counted. The populations of these counties were obtained from the Bureau of the Census City and County Data Book 1988. While the exact population within each radius is not known, a consistent methodology was used to generate accurate estimates.

Another market variable measures the median household incomes of people living within a 25 mile radius (**MINC25**) and a 50 mile radius (**MINC50**) of the bingo operation. This variable assesses how much money people have to spend on bingo. The income data was calculated using the same methodology as that used to compute the population figures. The figures on median household incomes are also found in the City and County Data Book 1988. The median incomes were weighted

according to the population of the counties. By weighting these figures, one reduces the risk of misrepresenting the median income of a larger county.

The similarity between **POP25** and **POP50**, and **MINC25** and **MINC50** suggested that a problem of multicollinearity might arise between the variables. The results of a preliminary regression further suggested multicollinearity. The **POP50** variable proved to be positive and extremely statistically significant at the 99% level of confidence. However, the coefficient of **POP25** was negative and statistically insignificant. Similarly, the coefficient of the **MINC50** variable was negative and statistically significant, while the **MINC25** variable proved to be positive and not as significant. To test for multicollinearity, I ran a correlation between the two variables. The test yielded a correlation of 0.854 between the two population variables and a 0.885 correlation between the two median household income variables. Furthermore, I ran both variables separately in the regression equation to check if the difference would be explained by the multicollinearity. The result was that the signs of the **POP50** and the **MINC50** variables remained the same, but the sign of the **POP25** variable changed from negative to positive and became extremely significant. Similarly, the **MINC25** variable also changed signs, from positive to negative, though it still remained statistically insignificant.

Since both variables were essentially measuring the same thing, the regression needed to be run with only one. I chose to use **POP50** since it seems to be a more accurate estimation of the distance people are willing to travel to play bingo. I noted that people often travel 25 miles daily just in their commute to work. Since

high-stakes bingo is more of a sensational good, people should be willing to travel a greater distance. In addition, since Indian reservations are not always near large metropolises, and since the good caters mostly to those who live off the reservation, it is not rare that chartered bus services will run to and from bingo sites. In fact, the Cherokee Indians of North Carolina attracted as many as 94 buses one Saturday afternoon from as far away as Washington, D.C., Maryland and Virginia.[21] Therefore, it was logical that the **POP50** variable be used instead of **POP25.** Similarly, I kept the **MINC50** variable in place of **MINC25.**

A third possible market factor measures the distance to the nearest alternative high-stakes bingo operation (**DIST**). The **DIST** variable is used to gauge the amount of competition an Indian bingo operation faces. While data does not exist on the bingo revenues for all the tribes, the names and locations of all 113 tribes operating bingo halls are available. Therefore, using the same standard road atlas for determining the previous two market variables, it is possible to determine the distance to the nearest Indian bingo halls, and use this as a measure of their nearest form of competition.

Another economic variable that might affect the demand for high-stakes bingo is the population of the tribe (**TPOP**). The tribal population is a useful indication of the tribe's labor force. In addition, many tribal members play the games. Therefore, a larger tribe would give a bingo operation a larger pool of possible players. The tribal populations are measured by the BIA and they are found in the

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[21]Harris, Art. "Bingo Madness." The Washington Post. 26 May 1985. p. G1.

BIA survey of bingo activity, as well as in their survey on tribal labor force estimates.

The amount of time that a bingo hall has been in operation is another factor. This variable (**STRTUP**) keeps track of how many months the bingo hall has been in operation. **STRTUP** reveals how much experience the management of the operation has had in running the bingo hall. Data on this variable is provided in the survey on Indian bingo activity by the Bureau of Indian Affairs along with the gross revenues of the bingo operations.

Finally, the propensity to gamble in a given region of the country is measured by the **PROP** variable. There is no easy or accurate way to measure the propensity to gamble of a region. I first tried to estimate this variable by deriving the per capita gambling expenditures for each state. Since lotteries have been legalized in 28 states, this seemed a promising indicator of gambling activity. However, it turns out that lotteries are mostly legal in Eastern states, and most of the bingo operations are in the west and midwest. In addition, some of the states that have bingo operations recently legalized lotteries; thus, their revenues were not known. So, I created a dummy variable (**PROP**) that relies on data from state lotteries. The theory is that if a state legalized lotteries, then it is likely that there exists an overall greater propensity to gamble in that state. If the bingo operation exists in a state where lotteries are legal, it is coded "1". Conversely, if the operation exists in a state where lotteries are not legal, it is coded "0".

Unlike the market variables, the organizational variables deal with policy matters that can be influenced by the tribe. The organizational variables describe the different kinds of bingo halls and the ways they are run. Some organizational factors are the size of the halls, the schedule of operation (which range from one bi-weekly session to three sittings per day), and the type of management. Once again, data on these types of variables is hard to come by. In this framework, the model employed will take into account the type of management utilized by the tribe. The organizational variable, (**ORGN**) is a dummy variable for which a "1" represents a tribally managed bingo hall, and for which a "0" represents a non-tribally managed operation. This data is available in the survey on Indian bingo activity prepared by the BIA.

Tribal capacity variables attempt to measure the ability of a tribe to operate a bingo hall. A good example of this sort of variable would be one that evaluates civil service stability, i.e. a representation of how well a tribal government changes hands. An obstacle that many Indian tribes face is that they lack the institutional stability to weather changes in their government. Some have neither the money nor the skilled personnel to run a stable bureaucracy. Political turmoil around tribal government transition often has detrimental impacts on enterprises. A civil service stability variable, then, measures how well a tribal government can adjust to changes; that is, will everyone in the tribal government be replaced, or will some continuity be maintained. The Economic Development Administration has surveyed the Indian tribes which they support, and has ranked them on a scale of 1 to 9 for many of

these types of capacity variables including civil service stability, capital formation and financial accounting. Unfortunately, there is only a small correlation between the tribes that they surveyed and those that run bingo operations. Consequently, the EDA data could not be used for this model. A tribal capacity variable for which data exists is the unemployment rates of the tribal members. Tribal unemployment rates give the researcher an idea of what type of economic situation the tribe faces. Tribal unemployment rates are gathered by the Bureau of Indian Affairs in their Indian Service Population and Labor Force Estimates.

Some of the tribal members who are statistically "employed" work in tribal government positions. Although technically they are counted as working, these are often make-work positions that are not truly indicative of employment. A better test of the employment rate was to create a ratio of the number of people working in private or tribally-owned businesses to the number of people in the labor force. This ratio gives the researcher an idea of the number of people working in businesses. While this breakdown is listed for some tribes in the 1980 Census report, it, unfortunately, did not correlate with enough tribes running bingo halls.

III.C. Expected Results

Before running regressions, certain results can be estimated -- some with more certainty than others. It is interesting to see how the actual results compare to what one might expect from economic theory alone.

Overall, I expected the market variables to be the most influential of the three categories in determining the success of an Indian bingo operation. I reached this conclusion from the microeconomic theory discussed in the previous section and from a discussion with the tribal attorney of the Seminole Indians.[22] Accordingly, I predicted that the effect of the population test would be both positive and large. The economics of supply and demand anticipate that as an area becomes more densely populated, there will be a greater number of people who will be interested in the good. Similarly, I predicted that as the distance to the nearest competition increases, so should the revenues of the bingo operation. This is true because it should be easier to sell a good if there are fewer competitors in the market. I further expected that the variable measuring start-up dates would have a positive coefficient: as a tribe gathers more experience running a bingo operation, its revenues should go up. In addition, time gives the consumers a chance to learn about Indian bingo. Finally, I expected that the propensity to bingo variable would

[22]In an interview with Jim Shore, Tribal Counsel for the Seminole Indian tribe, Mr. Shore argued that an essential part of a successful bingo operation lies in the tribe's location. 4 January 1989.

have a positive effect. States that have a propensity to gamble, as measured by their legalization of lotteries, should yield higher revenues for the operators.

Problems arise in predicting the sign of the income variable. Although this variable is an important part of the model, (because one needs money to play bingo), it is not clear whether or not bingo can be considered a normal or an inferior good. To a degree, bingo is normal in that the more money one has to spend, the more bingo one is apt to play. Nevertheless, when one reaches a certain level of income, the nature of the game and its notion of instant wealth may lose its attraction. At this point, bingo might become an inferior good. Consequently, it is difficult to predict the sign of the coefficient of the income variable (I expect that it will be positive to a point, and then become negative). Similarly, it is not possible to predict the size.

The organizational variable should play an important role in the model; many Indian tribes might lack the accumulated human capital (education and business experience) to run a successful bingo operation. Those that suffer from this problem might make up for it through strong outside management. Given that a "1" has been assigned to tribally managed bingo halls and a "0" to non-tribally managed operations, one would expect the coefficient of this variable to be negative.

Finally, while the tribal capacity variables should play an important role in the analysis, there exists no accurate means of measuring the capacity to run a bingo operation, given available data. It is difficult to predict the sign of the coefficient of the tribal unemployment rates. On one hand, this variable indicates the labor

capacity that a tribe has to employ in a business; a high unemployment rate would indicate that there would be many tribal members who could be employed in the bingo operation. Following this theory, I would predict that the tribal unemployment rate would have a positive effect on bingo revenues. A more realistic approach to interpreting this variable, however, is that it serves to gauge an Indian tribes' ability to successfully attract and manage business operations on the reservation. Thus, it can also be used as an indicator of their capacity to run a successful bingo operation. I expected that the tribal unemployment rate, then, should a have a negative effect on the revenues of the operation. A higher unemployment rate would indicate that a tribe is less capable of managing businesses successfully, and, therefore would be less successful at running a bingo operation.

A summary of the independent variables can be found in Table 3.

Table 3

Summary of Independent Variables and Expected Signs

Market Variables	Expected Sign
Population within a 50 mile radius (**POP50**)	(+)
Median income within a 50 mile radius (**MINC50**)	(?)
Distance to nearest competing Bingo (**DIST**)	(+)
Start-up date of Bingo operation (**STRTUP**)	(+)
Tribal Population (**TPOP**)	(+)
Propensity to Bingo (**PROP**) States where lotteries are legalized = 1 States where lotteries not legalized = 2	(+)
Organizational Variables	
Organization of Management (**ORGN**) Tribally Organized=1 Non-Tribally Organized=0	(-)
Capacity Variables	
Tribal Unemployment Rates Total Persons Unemployed (**TURATE**) Persons Unemployed but Seeking Work (**SURATE**)	(-)

Chapter IV
Results

The results of the regression analysis support some of the predictions stated in Chapter III. Table 4 provides a summary of these results. The coefficient of each variable is listed with t-statistics below in parentheses. In addition, the table delineates the statistical significance of each variable. The variable codes are explained and their expected signs (as predicted in chapter III) are in parentheses. Table 5 provides the means and standard deviations for all variables.

The coefficient of the population variable (**POP50**) proved to be positive and extremely statistically significant at the 99% confidence level. This result supports the theory that the demand for a good will rise when there is a greater population density in the area surrounding it. The intuition is that if there are more people near the bingo hall, it is more likely that there will be people who will want to play. A problem facing many tribes is that they are in relatively out-of-the-way places. The coefficient of this variable is relatively small (2.84) with a t-statistic of 4.92. Each additional person in a 50 mile radius of the bingo cite yielded an estimated increase of $2.84 in revenues for a bingo operation. Although the magnitude of the effect of this variable on gross revenues appears small, one must keep in mind that 33% of the populations measured within this radius were in the millions of people. The mean of **POP50** was 590,521.16 with a standard deviation of 885,607.48, and the

Table 4

Regression Results for Market Variables

Dependent Variable	Independent Variables (t-statistics in parentheses)								
	C	**POP50**	**MINC50**	**TPOP**	**STRTUP**	**DIST**	**PROP**	**ORGN**	**SURATE**
BREV	1350193.4 (0.23)	2.84 (4.92)****	-330.87 (-0.89)	116.59 (1.47)*	37138.16 (1.33)	16499.57 (1.52)*	2027513.7 (1.48)*	499067.28 (0.37)	-3539.69 (-0.13)

* Significant at the 85% confidence level
** Significant at the 90% confidence level
*** Significant at the 95% confidence level
**** Significant at the 99% confidence level

EXPLANATION OF VARIABLES
(expected sign in parentheses)

BREV = Total Bingo Revenues (Dependent Variable)
C = Constant
POP50 = Popultion within a 50 mile radius (+)
MINC50 = Weighted median income within a 50 mile radius (?)
TPOP = Tribal population (+)
STRTUP = Number of months in operation (+)
DIST = Distance to nearest competing bingo (+)
PROP = Propensity to bingo (+)
ORGN = Tribally vs. non-tribally managed (-)
SURATE = "Seeking" tribal unemployment rate (-)

Table 5

Means and Standard Deviations
for Independent Variables

Variable	Mean	Standard Deviation
POP50	1126879.70	1397817.90
MINC50	15080.51	1895.22
TPOP	5627.39	7223.59
STRTUP	41.76	21.24
DIST	55.55	48.72
PROP	0.33	0.48
ORGN	0.68	0.47
SURATE	36.68	21.04

observations ranged from 22,900 to a high of 4,202,400. Thus, from the regression equation, the population variable accounts for a difference of over $11.5 million between counties with the least and the greatest populations.[23]

The tribal population, the distance to the nearest competition and the propensity to bingo all proved to have an effect on the total revenues with somewhat statistical significance. The fact that the tribal population coefficient is positive reveals that a larger tribe should expect to make more money running a high-stakes bingo operation than a smaller one. Specifically, a tribe with one more tribal member yielded an estimated $116.59 of additional bingo revenues at the 85% confidence level. It is not so obvious why this theory should hold because one does not need

[23]I derived this figure by taking the difference between the counties with the greatest and the least populations and multiplying them by the coefficient of the **POP50** variable: (4,202,400 - 22,900) X 2.84 = 11,868,644.

many tribal members to run a bingo operation. However, I can offer some explanations. First, perhaps, some of these bingo operations are not catering exclusively to non-Indian players and tribal members themselves are playing the games. Second, this variable could be indicative of a tribe's overall power and, to some degree, it might be considered a tribal capacity variable. Finally, larger tribes might exist because they are able to keep more members on the reservation with good economic opportunities.

The coefficient of the competition variable (**DIST**) was also positive and very large. However, it was also only somewhat statistically significant (it could only be estimated at the 86% confidence level). A tribe should anticipate that with each additional mile that it distances itself from other competing forms of high-stakes bingo, it should expect to make an estimated $16,454.53 extra each year. This supports the idea that a good will be in higher demand if there are fewer substitutes. The fact that this variable could only be predicted at the 86% confidence level might be due to the method of measurement: the distances were not measured in road miles but in the actual distance from one point on the map to another. Thus, if more accurate data were available, it might be possible to predict the influence of competition on Indian bingo with more certainty. Still, it is important to note that the sign of the coefficient is consistent with the economic theory detailed in Chapter III, and its magnitude was relatively large.

Similarly, the propensity to bingo coefficient (**PROP**) was found to be positive and somewhat statistically significant. It could be estimated at the 85% confidence

level. This dummy variable accounted for those bingo operations that were located in states that had legalized state lotteries. The intuition behind this variable is that states that passed laws legalizing lotteries had a larger propensity to gamble than those states that had not. And those states that have a greater propensity to gamble are also more likely to play Indian bingo. The regression results predicts that people will be more likely to play high-stakes bingo in a state where gambling is circumstantially encouraged. The coefficient of this variable was also very large. In fact, a tribe should expect to earn an estimated $2,009,580.40 more each year in bingo revenues in a state where lotteries are legal.

The start-up date of the operation also seems to have an overall effect on the total revenue of the operation. The coefficient of **STRTUP** was very large, but it was only statistically significant at the 80% confidence level. A bingo operation that has one more month of experience should expect to make an estimated $37,138.16 in additional bingo revenues per year. I offer four explanations for this result. First, the management of the tribe gains experience in its operation. Through experience, kinks in the bingo business get ironed out, and over time the operation runs more efficiently with lower operational and managerial costs. A second explanation is that as more people play over time, the word spreads that bingo is an exciting and potentially lucrative pastime. Third this result might be explained in that most businesses start small and grow. Those exceptions that start on a large scale are oftentimes spin-offs of other operations that were once small and grew over time. The limitations of the data provide a final explanation for this result. Since the data

set only measures the tribes that are generating revenues, it does not account for those unsuccessful tribes that have died out. Thus, the older bingo operations are representative of those that have not already folded, so it is more likely that an older operation will be a successful one.

The income variable was found to be statistically insignificant. The t-statistic was -0.89 and it was only significant at the 62% level. While its sign was not predicted in Chapter III, the regression results reveal the coefficient to be negative. This implies that as the median income of the area surrounding the bingo operation goes up, the tribe should expect to lose bingo revenues. The sign of the coefficient supports the argument that bingo might be an inferior good. This is consistent with the belief that bingo, and non-casino gambling in general, is played by the less affluent members of society. One must note, however, the low level of confidence with which this was estimated.

Given these results, another variable was introduced to the "market" equation to try to shed light on the "inferior good" theory. The City and County Data Book provides information on how many people are below the poverty level in addition to the median household incomes for each county. Weighting these percentages for population, I created a "weighted percent below poverty level" variable (**WPBP50**). The intent of this variable was to see if bingo prospers in less affluent regions. Adding this exogenous variable to the regression left the signs and the statistical significance of the variables effectively unchanged. The coefficient of the **WPBP50** variable was negative. However, it proved to be statistically insignificant. While

little can be learned from this variable due to its statistical insignificance, the signs indicate that the income level that is most conducive to bingo revenues might be between the median household income and the poverty level.

The results of the organizational variable proved statistically insignificant in the analysis. The coefficient of this dummy variable was positive and large. The analysis predicts that a tribally managed operation would yield greater profits than a non-tribally managed operation. However, these results were predicted with only 29% confidence. The sign of this variable is the opposite of what I expected in the Model in Chapter III.

The other non-economic variable measured the unemployment rate of those tribal members seeking work. The theory tested here was that a tribe with a high unemployment rate would not be able to sustain a bingo operation as well as one with lower unemployment. While the sign of the coefficient supports this theory, it was statistically insignificant.

Chapter V
Conclusions

Although the results of the foregoing analysis shed some light on the issue of comparative success among Indian bingo operations, there are still some notable problems. As stated earlier, the lack of substantial quantitative data on the economic development of Indian tribes makes the study of Indian bingo a difficult topic for analysis. Gathering data through the tribes themselves is difficult because some tribes do a more thorough job of compiling data than others, and some are more open than others with the data they have. In addition, there is no central data gathering source that collects information on all tribes. While the BIA tries to do so, it has proven to be relatively ineffective in its efforts, due to its size and lack of efficient organization. In the case of Indian bingo, the data problem is further compounded by the nature of the topic (since it involves large sums of money) and the fact that it is a relatively recent phenomenon.

Of course quantitative analysis is not the only method of examining the economics of Indian bingo. Although it provides a framework for analysis, the real world does not always adhere to theoretical models. In a model, economists often cite the *ceteris paribus* assumption which holds extraneous factors constant. We know, however, that there are many outside factors that can affect the market for Indian bingo. In trying to account for these, I created the non-market categories. However, both the organizational and the tribal capacity variables proved to be

riddled with the same data problems that might affect any economic analysis of Native American economic activity. Consequently, I offer some alternatives to regression analysis that are not quantitative, yet may be informative nonetheless.

V. A. Alternatives to Regression

In creating a model, I had hoped that data that was not explained by the market variables could be explained by the organizational and capacity variables. While I still believe this to be the case, it was difficult to measure these non-market variables. Therefore, I could not provide quantitative proof that non-market variables have an impact on the Indian bingo industry. With this in mind, the following are some non-quantitative arguments.

The organizational variable presented in the model in Chapter III, for example, was a dummy variable that differentiated between tribally managed bingo halls and non-tribally managed bingo halls. It is very broad and measures only one aspect of organization. While it serves to distinguish between different types of management, it does not detect the differences that may exist between these different types of management. Two bingo halls that are both tribally managed might still be organized differently. For example, the playing cards, the schedules they maintain, and the structure of their awards might all be different. Specific data measuring

these types of organizational differences, however, are not yet readily available for analysis.

The Big Cyprus bingo hall in Big Cyprus, Florida, and the Hollywood bingo hall in Hollywood, Florida, provide an example of two non-tribally managed bingo halls that, according to the **ORGN** variable, are the same, but are actually quite different. The Big Cyprus hall has a seating capacity of over 5,000, while the Hollywood hall has a capacity of only 1,200. In addition to the resulting differences in the layout of the floor, the Big Cyprus hall runs on a schedule of only one day-long sitting every other week, whereas the Hollywood hall operates three sittings a day, seven days a week. Although the data set represented these two halls as being both non-tribally operated (essentially the same in their organization), there were, in fact, important organizational differences that separated the two. This variable proved to be statistically insignificant.

An even more influential non-economic variable might be tribal capacity. While I am certain that the state of affairs of the tribe, both politically and socially, influences the success of a bingo operation, I found this category equally difficult to measure quantitatively. It should be possible, however, to obtain through tribal enterprise histories, estimates of various tribes' abilities to operate successful tribal enterprises. We know, for example, that some tribes do a very good job of operating such enterprises while others do not.[24] Such data would have to be gathered on a tribe-by-tribe basis, might be difficult to obtain and would require time in the field,

[24]Cornell and Kalt, pp. 1-3.

but as a measure of tribal capacity it would probably do a far better job of predicting bingo success than the **ORGN** variable used here.

In addition to the organizational and capacity variables, another non-market variable that might have proved important (though one I was not able to measure) explores the relationship of the tribal government to the management of the bingo operation. Tribal governments have a history of actively intervening in the day-to-day affairs of the tribe. Unfortunately this often includes the day-to-day affairs of the tribes' economic enterprises. Cornell and Kalt [1988] describe this as a pervasive problem on Indian reservations. They discuss the difference between "strategic decision-making vs. day-to-day management of economic enterprise." [25] An example of a good management-government relationship can be found at the Seminole tribe.

Indian bingo has prospered on the Seminole Indian reservation largely due to the work of Chairman James Billie. Chairman Billie, realizing that the Seminoles had accumulated neither the financial nor the human capital to run a successful bingo operation, understood the need to hire an outside management group. However, in the ten years that the group has managed the bingo operation in Hollywood, neither the tribal chairman nor the council has interfered in their management decisions. While some of the tribal council members have expressed disapproval of some of the management group's decisions, the tribal Chairman has held his ground. Basically, his philosophy is that the management group was hired to do a job because they knew how to do it best. Therefore, he let them handle the day-to-day management

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[25]Cornell and Kalt, p. 28.

of the operation. As long as they remain within the strategic vision set by the Chairman and the Council, they are left largely alone.

In contrast to the Seminoles, the efforts of the Muckleshoot tribe in Auburn, Washington exemplify the adverse effects of third party interference on management-government relations. Like the Seminoles, the Muckleshoots understood the need for outside management help in starting a bingo operation. They, too, hired a management group and set up a tribal board of overseers. After a few months with no profits, the bingo board became impatient and wanted to interfere with the operation. Steady resistance from the management group, explaining that it took time to start up a bingo operation, resulted in the Muckleshoots firing the management group and asserting that they could run the operation more successfully on their own.

V. B. Recommendations

Notwithstanding the difficulty in gathering data on Indian bingo and the existence of extraneous factors that influence bingo revenues, the foregoing analysis uncovers many interesting conclusions about the Indian bingo industry. As predicted in the model in Chapter III, the economic market variables have proven to be an important factor in determining the success of a high-stakes bingo operation. The results of the regressions reveal that the population density of the area surrounding the bingo

hall is positive and extremely statistically significant. This appears to be the key variable in the analysis. The results indicate that the tribal population, the distance to the nearest bingo competitor and the propensity to bingo are also important in determining bingo revenues. the organizational and tribal capacity variables, as measured here, have less effect on success on a bingo operation. More adequate measures are needed.

The analysis suggests the following. Tribes considering bingo should pay close attention to their own location. Three factors are of primary importance. First, the location should be in a relatively populated area. Otherwise, there will be fewer non-Indians interested in playing. The tribe might end up catering only to the bingo interests of its members. Second, the tribe should be aware of its competitors. In regions of the country where there are many Indian reservations, there exists substantial competition for high-stakes bingo. The fact that one tribe is running a successful operation does not guarantee that a neighboring tribe will profit from bingo. The data suggests just the opposite. Finally, a tribe that is located in a region that has a higher propensity to gamble may have a better chance of success. Although the propensity to gamble is difficult to measure, the data indicate that those tribes located in states where lotteries are legal display higher bingo revenues.

In considering bingo as a development strategy, a tribe may wish to overlook size. It is not clear why this variable should affect bingo revenues. On the one hand, one can argue that Indian bingo is not just catering to non-Indians but perhaps to tribal members as well. On the other hand, the size of the tribe might indicate

its overall potential. The results, however, suggest that a large tribe will have at least some more success in running a bingo operation than a small tribe.

On the non-market side, the tribe's capacity to run businesses is important. However, inadequate capacities can be overcome by hiring outside help. In any case, qualitative analysis suggests that the relationship a tribal government has with bingo management -- Indian or non-Indian -- is important: political interference in the day-to-day management of the operation can be very damaging to its success.

Appendix

EXPLANATION OF VARIABLES

Variable	Explanation	Source
POP50	Population within a 50 mile radius	1988 Census
MINC50	Median income within a 50 mile radius	1988 Census
TPOP	Tribal Population	BIA
STRTUP	Start-up date of bingo operation	BIA
DIST	Distance to nearest competing bingo	BIA
PROP	Propensity to bingo	1987 Census
ORGN	Type of Management	BIA
SURATE	Tribal members unemployed but seeking work	BIA

LS // Dependent Variable is BREV
Date: 3-20-1989 / Time: 19:47
SMPL range: 1 - 51
Number of observations: 51

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT.	2-TAIL SIG.
C	1350193.4	5831067.2	0.2315517	0.818
POP50	2.8419284	0.5778420	4.9181757	0.000
MINC50	-330.86978	370.05598	-0.8941074	0.376
TPOP	116.58990	79.548614	1.4656434	0.150
STRTUP	37138.185	27913.748	1.3304621	0.191
DIST	16499.570	10856.993	1.5197182	0.136
PROP	2027513.7	1365386.6	1.4849375	0.145
ORGN	499067.28	1338947.4	0.3727311	0.711
SURATE	-3539.6892	26458.288	-0.1337838	0.894

R-squared	0.602740	Mean of dependent var	3575194.
Adjusted R-squared	0.527071	S.D. of dependent var	5331451.
S.E. of regression	3666428.	Sum of squared resid	5.65D+14
Durbin-Watson stat	2.214889	F-statistic	7.965525
Log likelihood	-838.2660		

Date: 3-20-1989 / Time: 19:48
SMPL range: 1 - 51
Number of observations: 51

Series	Mean	S.D.	Maximum	Minimum
POP25	590521.16	885607.48	4202400.0	22900.000
POP50	1126879.7	1397817.9	6369200.0	45700.000
MINC25	14679.961	2264.4080	20564.000	10287.000
MINC50	15080.510	1895.2207	19900.000	11472.000

	Covariance	Correlation
POP25,POP25	7.689D+11	1.0000000
POP25,POP50	1.037D+12	0.8541577
POP25,MINC25	1.127D+09	0.5730542
POP25,MINC50	1.079D+09	0.6555937
POP50,POP50	1.916D+12	1.0000000
POP50,MINC25	1.477D+09	0.4758567
POP50,MINC50	1.715D+09	0.6603570
MINC25,MINC25	5027003.5	1.0000000
MINC25,MINC50	3723o15.6	0.8850623
MINC50,MINC50	3521433.0	1.0000000

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