

Casino Gambling as an Economic Development Strategy

by

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Abstract: Casino gambling has experienced dramatic growth in the USA during the past seven years. Because this growth has occurred recently, there have been few systematic studies of its effects. This paper uses quasi-experimental control group methods to study 68 counties where casinos were opened during the period 1989-93 and three multi-casino counties. Results show that casino gambling is adopted by economically struggling counties and that it can be a successful development strategy. The effects trickle down to other sectors of the economy, including recipients of income maintenance payments. On the downside, local governments and local workers do not appear to reap the lion's share of benefits, as much of the income generated by casinos is dissipated through leakages outside the host county. Finally, some casino types and locations are marginally better than others, but currently these factors are not prominent determinants of casino effects.

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1.0 INTRODUCTION

Casino gambling is experiencing rapid growth in the United States. During the last decade, annual industry growth rates averaged nine percent, and revenues passed the ten billion dollar mark (Minnesota Planning 1992). The source of this growth is both intensive and extensive. The older casino gambling districts in Nevada and Atlantic City, New Jersey, have grown in leaps and bounds as they evolve into multifaceted recreational complexes. Native American tribes have found that by establishing casinos on reservations and tribally owned land, they can enhance their prospects for economic independence. Finally, during the past seven years, numerous states have legalized various forms of private casino gaming and additional states are poised to do so. This growth is expected to continue in the U.S. because of a variety of factors. Analysts have noted that local markets are still far from saturation, the aging population has more disposable income, governments are in search of additional ways to raise revenue, and competitive pressures for gaming are spreading (Minnesota Planning 1992).

Casino gaming is but the latest growth wave in a series of gambling booms. Almost every state in the U.S. now allows some form of gambling activity, including lotteries, parimutuel racing, and bingo. Casino gambling, itself, can take many forms, including machine gaming, table gaming, state controlled gaming, riverboat gaming, Indian gaming, and charitable gaming (Marfels 1995). The variety of gaming forms complicates the task of identifying its impacts. Virtually every community now has some form of gaming activity. Therefore, in a regional impact study that relies on comparative analysis, it will difficult to select communities for comparison without making certain assumptions about the appropriate scale of operation and form of activity.

Measuring the effects of casino gaming presents another problem because its spread is a relatively recent phenomena. Any substantive ex-post analysis must rely on the experiences of Nevada and Atlantic City, where casinos have been in operation for two decades or more. However, the scale and uniqueness of these localities make it difficult to extrapolate their experiences to other places. Another hazard occurs because the casino industry is a fledgling industry which can expect considerable turbulence caused by competitive pressures in the next few years. Many casinos will be driven out of business, and casino communities may be forced to resort to more innovative ways to retain their gambling clientele (Eadington

1995a, 1995b, 1995c). The likelihood of new federal regulations may also alter considerably the character of this industry.

Any discussion of the effects of casino gaming centers on two basic issues: social and economic. Casinos are alleged to aggravate all kind of social problems, including crime, prostitution, compulsive gambling behavior, family strife, and alcoholism (Friedman et al. 1989; Goodman 1994). There is no conclusive evidence about these matters. Unfortunately, regional economists have little to offer in this area because their stock of analytical techniques are better suited for measuring economic benefits than measuring economic costs. Complicating the measurement of these effects is the fact that many social externalities are fugitive, diffuse, and difficult to measure using a dollar metric.

This paper will focus primarily on the regional economic effects of casinos. Although we can expect casinos to have a stimulating effect (after all, big events often have big effects), some questions have been raised about the nature and duration of these positive impacts. As ephemeral casino riverboat enterprises in Iowa and Mississippi attest, not every region is situated to benefit from casino gambling (Scott, Ma, and Johnson 1996; *Wall Street Journal* 1995). Some communities may lack the prerequisites for developing a viable casino industry. Even those communities that do succeed in attracting substantial development may fail to realize all of the benefits because local labor markets are unable to supply the new industry with the trained professionals it needs. Lastly, questions have been raised about the effects of this recreational sector on the distributional effects of casino development. If the casino industry has few backward linkages, and instead "cannibalizes" native enterprises, it may create additional problems that require redress (Goodman 1994).

This paper uses quasi-experimental control group methods to measure the effects of casinos on regional growth and development and to provide more conclusive evidence for these and other economic development questions. This empirical method has gained increasing use in regional analysis over the past decade, and therefore, one can be confident that the results presented here are not just the product of methodological peculiarities. This paper is divided into several parts. The first section consists of a literature review concerning the effects of casinos on regional growth and development. The second section describes the quasi-experimental method. This section is somewhat abbreviated because

discussion and documentation of the method can be found in meticulous detail elsewhere (e.g., Rephann and Isserman 1994; Isserman and Beaumont 1989; Isserman and Merrifield 1987). The third section describes the characteristics of the data used in this study. The fourth section contains an analysis and explanation of the results. The final section provides a summary, conclusion, and policy recommendations.

2.0 LITERATURE REVIEW

To understand the likely economic effects of new casinos, it may be useful to first consider the characteristics of the average consumer in the average locale. Minnesota provides a good reference point. Minnesota is the largest gaming center between Nevada and New Jersey and has thirteen tribal casinos. It ranks nineteenth nationwide in terms of disposable income. According to its experience, casino gambling is most popular among the older and more affluent cohorts. Minnesota's gamblers are drawn mostly from within the state, and much of the effect of the Indian casinos have been to redistribute wealth from the wealthier urban to poorer rural areas within the state. However, tribal gaming has also brought new expenditures from outside the state. The majority of casino jobs are full-time with health benefits, and wages range from five dollars to eight dollars per hour plus tips (Minnesota Planning 1992). According to analysts in the state, the short term impact of tribal gaming has been to stimulate local economies, create jobs, increase local property values, put upward pressure on rural wages, and reduce public assistance costs. In the long term, they predict that the Indian casinos will provide a source of development capital for rural areas, assist in upgrading the tourist industry, and stimulate job training and managerial experience.

So far, so good. Based on this description, casino gaming would appear to be an ideal economic development strategy. Contrary to some representations, casinos do not prey on the poor and downtrodden. They are not likely to attract a troublesome or disruptive clientele. For rural areas, they provide decent intro-level and non-seasonal service jobs. The customers are drawn largely from outside the casino community (whether regionally or extra-regionally). Moreover, the economic effects are expansionary and should help to generate additional tax revenue for community infrastructure and other social needs. In many of these respects, casino gaming appears to be superior to other amusement and recreation sectors which are sometimes faulted for providing low-paying, part-time, seasonal jobs or

causing environmental spoilage.

However, perhaps this picture is misleading or too simplistic. Indeed, some questions have been raised about the likely benefits of casinos. Although it has been noted that economically struggling communities are often attracted to the casino development strategy (Goodman 1994), not everyone can expect to benefit. Eadington (1995b) surmises that, holding all else constant, the more urbanized a community is, the less likely it is to benefit from casino development. In large urban areas, especially those that do not ordinarily attract many tourists, it is far more likely that customers will be drawn locally. A useful rule of thumb is that when less than half of the gamblers are derived from outside the area, the industry is likely to have a redistributive effect within the community rather than an expansionary effect connected to exporting tourist services (Abell Foundation 1994). This situation is far less likely to prevail in a more rural setting because large rural casinos cannot prosper by marketing primarily to local residents.

Like any other recreational activity too, some rural communities are better situated to provide casino services than others. The locational determinants are documented in the tourism planning literature (Gunn 1994; Smith 1988). For instance, communities in close proximity to larger urban areas are more accessible to potential tourists. Regions with good transportation infrastructure are more attractive as sites for the same reason. Because of recreational service complementarities (cultural heritage, theme parks, etc.), communities that have existing recreational endowments can market these attractions in combination with casino gaming to increase their market. Finally, areas that provide other needed service sector inputs competitively, such as skilled labor, low-paid labor, good public services, amenities, etc. are more promising candidates for casino investment.

The type and location of casino development may also affect the nature, strength, and duration of development impacts. First, there appear to be strong localization economies in the casino industry. In those areas where competition is permitted, casinos show a marked tendency to cluster. Therefore, any individual casino should have a greater impact on the regional economy where other casinos are present. Second, some types of casino gambling are inherently less efficient or customer-friendly than others, and, therefore, less likely to draw patrons. In particular, riverboat casinos are limited by space and operating conditions. They are regarded as hazardous or unnecessarily restrictive to many gaming customers and

may not offer the economies of scale available to larger land-based casinos (*Wall Street Journal* 1995). Third, some state laws which restrict casino operations can have a detrimental effect on the competitiveness of state casinos. For instance, some states restrict wagers to small amounts, and others require the gambling facilities to float on rivers. The rationale for these restrictions is to reduce some of the social externalities (such as crime and compulsive gambling) which are thought to be associated with casino gambling (Eadington 1995a, 1995b, 1995c). However, these restrictions can make the sites less attractive for all types of potential gamblers, and may further loosen linkages with the local economies. The patchwork system of U.S. state laws can also have the effect of creating lucrative gaming sites near the borders of individual states that restrict or ban casino gaming operations. Unlikely sites for recreational development along a casino permissive state's border can blossom into lucrative gaming locations if only because surrounding states restrict casino gaming.

Communities should be forewarned that substantial economic growth may not always translate into tangible economic benefits to the residents or locally owned businesses. Isserman (1994) describes the results of Atlantic City casino development as being very uneven. It has not resulted in substantial revival of other flagging economic sectors in the county. In fact, the development that has occurred can best be described as an "island" or an "economy within an economy" because of the preponderance of job creation in the casino service sectors with minimal spillover effect. Moreover, many of the newly created jobs may be assumed by out-of-county residents rather than local people, perhaps because local skilled labor is unavailable or casino firms discriminate against minority or underprivileged residents. The most extreme negative distributive effects of large-scale casinos occurs when native enterprises are "cannibalized" (Goodman 1994). This occurs when local establishments are driven out of business by casino competition. Because casinos are often full-service complexes that offer food service, retail marketing, lodging, and other services, native enterprises are vulnerable to competition in these areas. Even though rural casinos may cater to outside tourists, their effect on local service establishments still be detrimental because they draw some local customers away from existing retail trade and service providers in the same way as a new regional shopping malls or hyper-markets do. In some circumstances, casinos may also displace existing businesses and residences by driving up local real estate prices and rents (Goodman

1994).

3.0 RESEARCH METHOD

The quasi-experimental control group method used here is documented carefully in several published studies, including Isserman and Merrifield (1987), Isserman and Beaumont (1989), and Rephann and Isserman (1994). The method chooses a control group of counties similar in economic makeup to counties which have received a particular treatment. In the case of casino development, the treatment would consist of the construction or opening of a casino facility. The control group of untreated counties (or counties without casinos in this case) serve as a benchmark against which to measure the effect of the treatment.

Since the ultimate goal is to compare the growth rates of casino and non-casino counties, every effort should be made to control for plausible non-casino causes of economic growth. For this study, the determinant variables were drawn from mainstream theories of regional economic growth, including reduced form equations of regional economic growth described in Richardson (1973) and von Böventer (1975). These theories emphasize the role of spatial context, prior economic dynamism, the cost of labor and capital, and industrial structure in regional economic growth. Variables which attempt to measure these concepts are listed in table 3.1. They are used as selection variables in choosing county control groups.

Control counties meet four conditions for this study. First, they have no casinos. Second, they are sixty miles distant from a casino county in order to protect against spatial interdependence. Third, they do not have an inordinate amount of data gaps caused by input data disclosure restrictions. Fourth, they are approximately similar to casino counties in industrial structure, spatial position, economic growth, and demographics in a period before casinos began to operate in the study counties. A similarity measure is computed using the Mahalanobis metric. It combines the variables listed in table 3.1 in a way to produce a single number that may be used objectively for similarity ranking purposes. For the purposes of making group comparisons, an optimal matching algorithm was used to determine the single best non-casino match for each casino county (Rosenbaum 1989). For three individual multi-casino county case studies, a

control group of forty counties for each was selected. Each of these control group selection methods was motivated by the respective statistical testing procedures described in section 4.2 below.

When a control group has been selected, it may be evaluated further by performing a statistical pre-test. The pre-test compares the growth of the casino treated county(ies) to the control group during a period before casinos were opened. If the control group follows a similar growth path to the casino counties prior to the introduction of casinos, the control group can be used as a benchmark for assessing the effect of the casino. This stage is often referred to as a "post-test." For each of the casino case study counties and casino county groups used in this study, a statistical pre-test was conducted by choosing a base year in advance of the expected impact years.

4.0 DATA

4.1 CHOOSING STUDY COUNTIES

The casino counties used in this study were identified by using the 1994 edition of *Casino Resort and Riverboat Fun Book Guide*, published by Casino Vacations, Inc. The 1994 *Guide* describes casinos that were open as of 1993. The guide makes no claim as to completeness and, in fact, excludes several levels of gaming operations, including bingo and pari-mutuel betting. In addition, the *Guide* cannot be used to determine the size of each casino. Data regarding the square footage of casinos was available for only about one-third of the entries. These data limitations are not particularly troubling because the effect of ignoring this information should be to create more conservative impact estimates. The effect of excluding pari-mutuels from the list of treatment counties should serve to create a downward bias in economic impact estimates obtained here because one would ordinarily expect their county-wide effects to be expansionary. Moreover, lumping smaller operations in with larger casinos should create smaller average economic impact estimates.

In order to study the economic effects of casinos, several categories are examined. First, all a group of casino counties, outside of long-established casino areas such Nevada and Atlantic County, New Jersey, are compared to a control group of non-casino twins. These sixty-eight counties are listed in table 4.1. Second, the matched casino counties are divided into casino categories, including: (1) Indian gaming (INDIAN) counties (i.e., counties where Indian casino gaming exists), (2) single casino (SINGLE) counties

(i.e., counties that contain only one casino facility), and (3) riverboat casino (RIVER) counties (i.e., counties where riverboat casinos originate). Each county may be categorized into one or more of these categories (see table 4.1 column 2). Third, three individual multi-casino counties which have received much national attention are examined (Kifner 1996; Bogert 1994; Sternleib and Hughes 1983). These are: Atlantic County, New Jersey, (home of Atlantic City), Gilpen County, Colorado, (home of Central City and Black Hawk), and Tunica County, Mississippi.

4.2 MEASURING ECONOMIC AND SOCIAL IMPACT

Development impacts were measured using economic data from the Regional Economic Information System (REIS) (US Dept. Of Commerce 1996) and crime data from the Uniform Crime Reports (U.S. Department of Justice, Federal Bureau of Investigation 1995). REIS contains personal income and employment data. The data used here is measured at the sectoral level and includes earnings and employment in industries thought to be important in assessing casino effects. These include sectors such as services, retail trade, and the state and local government sector. In addition, the REIS contains information concerning population, per capita income, residential adjustment (a measure of net earnings leakages paid to non-residents), transfer payments (which is itself divided into several categories including government retiree payments and income maintenance payments), and dividends, interest, and rent. The sectoral abbreviations used in illustrations are as follows: total employment (EMP), total earnings by place of work (EAR), per capita personal income (PCI), population (POP), income maintenance payments (TRF), dividends, interest, and rent income (DIR), residential adjustment income (RES), construction employment (CON), retail trade employment (RTL) and earnings (RTLY), finance, insurance, and real estate employment (FIR), service employment (SVC) and earnings (SVCY), state and local government employment (STL) and earnings (STLY). The Federal Bureau of Investigation (FBI) data contains reported offenses in the following categories: murder, rape, robbery, assault, burglary, larceny, car theft, and arson.

The basis for impact measurement and tests of statistically significant effects for the group comparisons are growth rates differentials by income, employment, or crime category. Notationally, the growth rate differences are written as follows:

$$(4.2.1) \quad D_{jt} = R_{cjt} - R_{gjt}$$

where D is the growth rate difference; c is a casino county c ($c=1, \dots, 68$); g is control county g ($g=1, \dots, 68$); R is the growth rate measured from base year b ; j is one of the response variables ($j=1, \dots, k$); and t is the test year. For the individual county case studies, growth rate differences are converted to actual impact estimates in order to provide a more intuitive basis for comparison. Impacts are obtained by multiplying the growth rate differential (i.e., the difference between casino county growth and median control county growth) by the base level value of the corresponding income, employment, or crime category for the casino county. Notationally, this is written:

$$(4.2.2) \quad I_{jt} = (R_{cjt} - R_{gjt}) \times V_{cjb}$$

where I is the estimated impact, c is the individual casino county, g is the median control group county; R is the growth rate measured from base year b ; j is one of the income, employment, or crime categories ($j=1, \dots, k$); V is the category value; t is the test year; b is the base year. The t -test is the underlying statistical test for all grouped comparison tests. It is simply a test of the mean growth rate difference of the matched pairs. A non-parametric rank test comparing casino county growth to the growth rates of its forty county control group is used for the individual county case studies (Isserman and Beaumont 1989).

For group comparisons, the casino control group is selected during the period 1969-72. All of the selection variables are 1969 values except for total income growth and population growth which are calculated over the period 1969-72. 1972 serves as the base year and 1987 is the final test year for the pre-test, during which casino counties and their matches are tested to determine if they follow similar income and employment growth trajectories before the advent of the casinos. When this is confirmed, 1987 is selected as the new base year for the purpose of isolating better the actual net effects of the casinos. Because of data limitations, 1980 served as the initial base year for crime comparisons. This was, in similar fashion, changed to 1987 for purposes of isolating the crime effect of the casinos. For the individual case studies (Atlantic, Gilpen, and Tunica), control groups were selected several years in

advance of the casino establishment. For Atlantic, the control group was selected 1972-75; for Gilpin it was 1985-88; for Tunica, it was 1986-89. This left two years prior to the actual impacts to evaluate the fit of each control group.

The results are presented using a table and a series of graphs displaying the differences between casino counties and their respective control groups. Sectoral growth rate differences that are statistically significant different from zero at the $\alpha = 10\%$ level are indicated by redlining on the tables and annotation in the lower left-hand corner of each graph. For example, in table 5.1, casino counties grew 99% faster in service employment than their matches during the period 1987-94. This is not only absolutely impressive. It is positive in a statistical sense as well. On the other hand, the 43% difference in manufacturing employment growth during the pre-test (PRE) period 1972-87 is not statistically significant, indicating there was no real difference.

For all counties and county groups examined here, the pre-test revealed few problematic statistically significant positive discrepancies. That is to say, the casino counties were either growing at the same rate or slower than their respective casino counties during a period before the advent of casinos. Therefore, subsequent positive growth rate differentials may be reasonably attributed to the effect of the casinos.

5.0 RESULTS AND ANALYSIS

The introduction and literature review raised numerous questions about the regional economic effects of casino gambling that this section will attempt to answer. The following assertions will serve as hypotheses: (1) counties are attracted to the casino development option because they are experiencing economic problems and see it as a solution to their economic difficulties, (2) casino development is a good way to stimulate economic growth, (3) casino development is a good way to stimulate economic development, (4) new casino operations contribute to the growth of the state and local government sector of the host county, (5) casinos result in fewer residents drawing on public assistance, (6) new casinos increase the incidence of crime, (7) casino development does not benefit other industries, (8) some types of casinos are more likely to stimulate economic growth than others, (9) casinos draw many of their

employees from outside the host county, (10) competitive pressures are beginning to reduce the stimulative effects of established casino districts, and (11) regional characteristics help determine the overall economic effect of a casino. Replies to each of these questions are arranged below:

Lagging counties seeking a solution? The types of counties that received casinos during the period of this analysis can be characterized as economically depressed. Generally, casino counties had poor economic fortunes during the 1970s and early 1980s. Figure 5.1 shows the effect of casinos during the period 1973 to 1987 on key sectors. Before the arrival of casinos, the average county suffered from lagging earnings and employment growth. State and local government earnings and employment lagged behind matched counties during this period also. This situation was basically reversed by the early 1990s. This result suggests that counties may recruit casinos to offset persistent decline in their economies.

A good way to grow the economy? A new baseline of 1987 was selected in order to isolate the effect of casino counties, which began service during the years 1989-93. Figures 5.2 and 5.3 show results for the same key sectors plus income maintenance payments (TRF); dividends, interest, and rent (DIR) income, population (POP), construction employment (CON); and finance, insurance, and real estate employment (FIR). Overall earnings grew forty-six percent faster in casino counties during this time period than in the matched counties. This result is statistically significant. Driving this overall effect was the service sector which grew nearly 100 percent faster. This huge effect, no doubt, stems largely from casino development. Positive effects can be found elsewhere, including construction, retail trade, and dividends, interest, and rent. One can infer from this evidence that casinos are, indeed, a good way to grow an economy.

What happens to "economic development"? Economic development is a multifaceted concept that reflects numerous concerns not captured by conventional income statistics (Shaffer 1989). Most measures, however, attempt only to gauge the welfare of the "average" resident. Per-capita income, imperfect as it is, still provides one plausible measure of economic well-being. During the post-test period, casino counties grew nearly five percent faster than their non-casino county counterparts (see table 5.1).

This result is statistically significant. Therefore, casinos not only grow the local economy, but the average resident prospers as well.

Do casinos stimulate local government spending? During the pre-test phase, casino counties grew slower than their matches. This was more pronounced in the state and local government sector than other sectors (see figure 5.1). Post-test inferences must be tempered by this finding. No valid inferences could be made for the post-test if the growth continues to be negative, and positive post-test period growth is likely to provide a more conservative measurement of impacts (Isserman and Rephann 1995).

State and local government spending does not expand as hypothesized during the period 1988-94. This result may be an artifact of the relatively poor control group fit for this sector. Alternatively, it may imply that state and local government sector was not stimulated by new casinos. Yet, this latter conclusion is difficult to reconcile with the fact that communities often recruit casino development with the hopes of generating new public revenue. Moreover, one might expect that the casino industry would generate a need for additional local expenditures to build public infrastructure and ameliorate purported negative social effects. If additional public revenue were generated and spent, it would surely be reflected in the earnings of workers in the county state and local government sector and should be detectable there.

That it is not invites some speculation. One possible explanation is that casino revenue merely displaces revenue lost from competing gaming types such as lotteries and parimutuel or, that casino revenue is used to decrease tax burdens elsewhere. In this instance, no net revenue effects would accrue. If net revenue is affected, there is still no guarantee that the expenditures will be spent locally. They may be diffused throughout the state in a way that makes it difficult to detect changes at the host county level. Alternately, casinos may not generate a need for additional public expenditures under certain circumstances. The declining communities which recruit casinos may already have considerable excess capacity and may already have the resources to deal with any resulting negative social effects of casino development. Finally, as the next sections seem to indicate, the casinos may actually generate few or no negative social effects, thereby making corrective action unnecessary.

Is there less need for public assistance? Based on the results here, one could infer that casinos contribute to lessening reliance on public assistance. This occurs in the aggregate (see figure 5.3) as well as in multi-casino cases of Atlantic County, Gilpin County, and Tunica County, (these results are not shown graphically because of the relatively small magnitude of the statistically significant impacts). Although income maintenance benefit payments make up only a small portion of personal income, it is purported to have negative effects disproportionate to the actual dollars dispensed. It may be associated with social maladies such as poverty and the long-term unemployment and its alleviation can be regarded as a notable plus. The results suggest that casino earnings and employment opportunities do "trickle down" to the poor to some extent.

Do casinos cause crime? The answer suggested by table 5.1 is "no." The average casino host county was no more likely to experience a crime wave than its non-casino match in 1994, the most important year for comparison. This was true for every category of reported offense where inferences can be made (no inferences can be made for rape and arson because of positive differences during the pre-test period), including crimes of an economic and violent nature. However, as figures 5.7 and 5.8 show, this does not hold true for every casino county. The multi-casino cases of Atlantic and Gilpin actually saw statistically significant crime impacts after the introduction of casinos (Tunica is not shown because of data unavailability). Most of this increase stems from a large rise in larcenies. In each county, total reported offenses in 1993 were over 50% more than would be expected based on the performance of the control groups.

These latter results may suggest nothing pernicious. Crime increases may stem from increased tourist volumes rather than anything inherently deleterious about gambling casinos. Indeed, crime might be stimulated by the arrival of any major recreational attraction. This conclusion is partially supported by the results of an exploratory regression analysis reported in table 5.2. The dependent variable is the growth rate difference between casino and non-casino matches for all reported offenses. The independent variables are various spatial and economic characteristics of these study counties, including: (1) RIVER (whether a county hosts a riverboat casino or not, 1=Yes and 0=No), (2) PCI87, per capita personal income

in 1987, (3) PREC87, the percent of total personal income in the amusements and recreation services industry in 1987, (4) PDEN87, population density in 1987, (5) PTPP87, population potential in 1987 for counties within 60 miles, and (6) CITY250, distance to a city with 250,000 residents in 1980. The result indicates that only the coefficient for PREC87 is positive and statistically significant. One would anticipate higher tourist volumes to be evident in those counties with relatively larger amusements and recreation services sectors.

Do other industries benefit? Figure 5.3 shows that other sectors of the economy may benefit. Although the service sector effect is the most dramatic (statistically significant during 1990-94), the differences between the casino and non-casino counties are significant for other industries during the casino opening period as well. Positive differences are noticeable in retail trade during 1990-91, finance, insurance, and real estate (1989-94), and construction (1991-93). The federal civilian (1990, 92, 94) and federal military (1990-94) sectors also advanced during this period, but the magnitudes are relatively small and unlikely to be related to casino development. On average, using this methodology, there were no declines in overall income or employment that can be attributed to the casinos. Therefore, there is no evidence that casino development "cannibalizes" other sectors of the economy.

Who gets the jobs? Figure 5.2 shows that residential adjustment growth is negative and statistically significant in 1994. This indicates that a net outflow of income is stimulated by the casinos. This effect may result from casino jobs being awarded to people who reside outside of the county. Extreme examples of earnings drains are shown in figures 5.4-5.6 for multi-casino counties. In each instance, a substantial portion of the total impact is offset by the a net outflow of earnings. These results suggest that casinos must look outside the host county for their labor needs and/or that earnings are transmitted outside the county in other forms. In either event, the fact that much of the casino generated income goes to "outsiders" is noteworthy.

What about increased competition? Atlantic County, New Jersey (see figure 5.4) provides a sobering

look at the consequences of increased competition in the casino industry. The expansion in Atlantic City appears to have stalled in the early 1990's. This event occurs during a time when many other states enacted legislation to permit a greater variety of gaming activities. This result should be of concern to traditional gambling venues which are considering adding capacity.

Are some casinos better than others? It has been argued that riverboat casinos are less likely to stimulate economies than land-based casinos because of their relative isolation from host counties. This hypothesis is not supported by the results of figure 5.9. Three categories of casino counties are examined here: (1) counties which contain at least one riverboat casino (RIVER), (2) counties which contain at least one Indian casino (INDIAN), and (3) counties that contain, at most, one casino of any type (SINGLE). As the figure shows, riverboat counties as a group have bigger total employment effects than others. They grew twenty-five percent faster than their control matches, while Indian casino counties grew 14 percent faster, and single casino counties grew about twelve percent faster. It is possible that other factors, such as scale of casino operation and county locational characteristics, may be impinging on this relationship. Therefore, the next section describes the results of a multivariate regression analysis used to investigate this issue further.

Are some locations better than others? Based on the literature review, one should expect the expansionary effects of any given casino to vary based on county and casino characteristics such as: (1) proximity to larger urban areas, (2) quality of transportation infrastructure, (3) restrictiveness of state casino gaming regulations, (4) proximity to non casino-gaming state(s), (5) presence of other recreational attractions, climate, and amenities, (6) scale of casino development (as measured, say, by square footage of gambling area), and (7) quality, cost, and amount of other recreational industry inputs such as labor and public services. The expected relationships are as follows: (1) closer proximity to larger urban markets and better connectivity infrastructure (roads, rail, and airports) result in greater impacts, (2) looser casino gaming regulations and close proximity to restrictive states are associated with larger impacts, (3) a large and diverse recreational sector and good climate/amenities contribute to larger impacts, (4) larger casinos

add to larger effects, and (5) higher quality labor resources and lower wages contribute to higher effects.

In order to explore these relationships, a regression analysis was performed using the total employment growth rate differences obtained from the control group analysis as the dependent variable. The independent variables used here reflect only partially the factors described in the literature because of regional level data limitations. These variables are mainly locational and industrial characteristics of the counties and were introduced earlier in the context of explaining crime rate growth. PTPP87, PDN87, and CITY250 reflect market potential and accessibility. PCI87 is a crude indicator of regional wages. PREC87 measures the size of the recreational sector. Since it reflects the size of this sector before casino development, it may partially measure diversity as well as size. RIVER is a proxy variable used to measure the size and accessibility of the casino.

Table 5.2, column (2), presents the result of the regression analysis. The explanatory power of the model is poor, but two variables are statistically significant using a two-tailed test with $\alpha=.10$. Consistent with the hypothesis that riverboat casinos are less stimulative, the coefficient for RIVER is both negative and statistically significant. However, the coefficient for CITY250 is positive, indicating that poorer market access is associated with a larger impact. This result conflicts with expectations from tourism market analysis but casino gambling is no ordinary tourism industry. Indeed, Eadington (1995b) surmises that more urban markets will experience a preponderance of local substitutional rather than export effects. Therefore, urban proximity may have a depressing effect on the stimulative effect of new casinos.

These findings are tempered, however, by the very small values of the coefficients. Consequently, one may question how much of a hindrance casino and locational characteristics are at this stage in U.S. casino industry development. As some observers have noted, the casino gambling market may be quite undersupplied because of legal and institutional barriers (Fefer 1993). It may be so far from saturation that normal competitive processes have not yet come into play in determining locational successes.

6.0 CONCLUSIONS

Casino gaming is a popular strategy for local economic development in the United States, and it continues to grow in popularity as states further loosen their restrictions on gaming activities. This study

focuses on the regional economic questions surrounding this issue. It confirms much of the conventional wisdom concerning casino gaming development. It is an attractive development strategy for economically lagging counties. It generally stimulates economic growth (as measured by earnings and employment) and development (as measured by per capita income). Moreover, the effects appear to be broadly expansive and to trickle down to the poor. Crime, while increased in some multi-casino counties, is not noticeably affected elsewhere. On the downside, for one reason or another, earnings in the states and local government sector are not measurably stimulated. Moreover, some of the income generated by casinos is dissipated through leakages to those who reside outside the county. Finally, not all counties are poised to benefit equally from casino development. Some casino types and locations are better than others, although these factors are not paramount at this time.

These results suggests some cautionary advice for communities pursuing a casino economic development strategy. Since casino development may require additional infrastructure and public services, communities must be vigilant in assuring that they capture the benefits of the development in increased local expenditures. Moreover, there should be mechanisms to ensure that local labor is equipped with the skills necessary to fill the new jobs. This may entail training subsidies for local workers or the creation of targeted educational programs in hospitality management. Finally, communities should realize that the casino industry represents somewhat of an economic development gamble. Some regions are better situated for the inevitable next round of competition than others, even if it is not painfully obvious yet. As gaming activity expands and a uniform body of federal statutory law develops, casino communities will find themselves dangerously exposed to outside competition. Therefore, if a community wants to avoid the booms and busts of casino development, it should assess its prospects realistically. As part of this assessment, it should appraise the desirability of a casino within the framework of an overall long-term tourism development strategy.

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Table 3.1 Control Group Selection Variables*Industrial Structure*

Farm earnings share of total personal income

Manufacturing earnings share of total personal income

Federal government earnings share (civilian and military) of total personal income

Population, demand, and spatial aspects

Logarithm of population (base ten)

Logarithm of population potential for counties within 60 miles

Logarithm of population potential for 60-500 mile radius from the counties

Residential adjustment income share

Transfer income share of total personal income

Per capita dividends, interest, and rent income

Per capita total personal income

Distance to city of population 25,000 or greater

Distance to city of population 100,000 or greater

Growth

Total personal income growth rate

Population growth rate

Data sources: U.S. Department of Commerce, Bureau of Economic Analysis (1986); U.S. Department of Commerce, Bureau of Census (1979, 1980)

Table 4.1. Casino Counties

Gilpen, Colorado	Oneida, NY
La Plata, Colorado	Benson, North Dakota
Montezuma, Colorado	Mountrail, North Dakota
Teller, Colorado	Rolette, North Dakota
New London, Connecticut	Charles Mix, South Dakota
Jo Daviess, Illinois	Codington, South Dakota
Kane, Illinois	Lawrence, South Dakota
Madison, Illinois	Lyman, South Dakota
Massac, Illinois	Snohomish, Washington
Rock Island, Illinois	Whatcom, Washington
St. Clair, Illinois	Ashland, Wisconsin
Tazewell, Illinois	Barron, Wisconsin
Will, Illinois	Bayfield, Wisconsin
Clinton, Iowa	Brown, Wisconsin
Dubuque, Iowa	Burnett, Wisconsin
Monona, Iowa	Forest, Wisconsin
Scott, Iowa	Jackson, Wisconsin
Tama, Iowa	Milwaukee, Wisconsin
Woodbury, Iowa	Sauk, Wisconsin
Baraga, Michigan	Sawyer, Wisconsin
Chippewa, Michigan	Vilas, Wisconsin
Gogebic, Michigan	Wood, Wisconsin
Isabella, Michigan	
Leelanau, Michigan	
Mackinac, Michigan	
Menominee, Michigan	
Beltrami, Minnesota	
Carlton, Minnesota	
Cass, Minnesota	
Cook, Minnesota	
Goodhue, Minnesota	
Lake of the Woods, Minnesota	
Mahnomen, Minnesota	
Mille Lacs, Minnesota	
Pennington, Minnesota	
Pine, Minnesota	
Renville, Minnesota	
St. Louis, Minnesota	
Scott, Minnesota	
Yellow Medicine, Minnesota	
Adams, Mississippi	
Hancock, Mississippi	
Harrison, Mississippi	
Tunica, Mississippi	
Warren, Mississippi	

Table 5.2 Regression Analysis of Growth Rate Differences

	(1) Crime	(2) Employment
Intercept	0.0466	-0.0483
RIVER	0.0231	0.0122**
PCI87	0.0000	0.0000
PREC87	0.1165**	0.0342
PDN87	0.0000	0.0000
PTPP87	0.0000	0.0000
CITY250	0.0000	0.0001**
R ²	.12	.19

** Indicates statistical significance at the 10% level.

Additional figures and tables available upon request.