Winning, Losing, and Breaking Even: New Casinos' Effects on Economic Development Impacts of Existing Casinos

by

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Abstract

The number of casinos has grown substantially since 1990 as states and localities try to find new tax revenue and jobs. After some initial successes across the United States and Canada, the strategy has become even more popular. With a business so dependent on tourists, how has the spread of casino gambling affected the returns communities get from hosting casinos? Broadly speaking when neighboring areas pursue the same economic development strategy, is any economic development actually occurring or are benefits just being transferred from one to the other?

This analysis addresses that question and provides some preliminary evidence. Casinos have positively impacted economic conditions at the county level, though the benefits are strongest in the early stages of the casino's existence. Competition with other casinos has had negative effects on the tax revenue individual casinos pay to states. More importantly, casino competition has negatively affected economic development impacts of existing casinos, though in most cases the net benefits are still positive.

Thesis Advisor: Paul Osterman, Professor of Human Resources and Management
Thesis Reader: Frank Levy, Rose Professor of Urban Economics

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Chapter 1: Introduction

Of course there are benefits to casinos. Why else would the industry have seen such exponential growth without tangible benefits? In 1975 all of the casinos in the country were in Nevada. As of 2010, there are over 500 casinos operating in 36 states. Growing acceptance of gambling as a recreational activity is partly responsible. However, in the last 20 years states have used casinos as a way to fill fiscal budget gaps, bolster tourism as other sectors declined, and provide jobs for their constituents.

In most places not named Nevada, opening a casino is not a matter of developing a business plan, obtaining financing and permits, and then constructing a facility like other businesses. Opening casinos may involve legalization, and afterwards, firms must competitively bid for a limited number of gaming licenses. If a firm wins a license, it operates under limits on the amount and types of gaming allowed, much higher tax rates than other industries, inconvenient site locations, and sometimes restrictions on hiring and purchasing. State governments impose higher than normal requirements because of the negative side effects associated with casinos (crime, bankruptcies, addiction, new infrastructure, etc.). Firms tolerate the requirements because casinos have proven to be highly profitable businesses. In addition to having relatively low operating costs, limited licensing and deliberate placement give many of them regional gaming monopolies within the state.

Rhetoric surrounding casinos as an economic development strategy normally boils down to taxes (either lower rates for residents or just more revenue) and jobs. Casinos are legalized and located in communities where tax revenue and jobs are maximized. Given that goal, states place casinos and build new casinos hoping to benefit from the gambling expenditures of citizens from other states. As casino revenue goes, so goes a state's gaming tax revenue; states take a percentage off the top. As for jobs, this relationship is not as straight-forward, but generally speaking the bigger the gaming business, the more jobs it provides.

As casinos have multiplied and expanded, analysts have cautioned that the casino market could be reaching its limits. Saturation occurs when there are so many casinos that every casino essentially serves local clientele (Rose 1998). The 'convenience gamblers' likely choose to gamble at the location nearest to their home. When new casinos open nearby, they do not go to casinos farther away, causing those casinos to lose revenue. Many casinos were built in the hopes of attracting tourists. If due to saturation, casinos fail to attract tourists from other states, they must depend on local spending to support the operation.

Much of the initial effort to allow casinos in State A comes from the success of casinos in neighboring State B, particularly when many gamers in State B travel from places in State A. The lack of casinos is viewed as a missed opportunity for revenue and jobs for State A's local economies. Building casinos in State A should 'recapture' some of the revenue lost when residents travel to gamble. The logic of recapturing revenue lost to other states is understandable. This thesis sheds some light on how existing casinos might view new casinos[1], and reviews how states respond to and are affected by legislative gambling changes in neighboring jurisdictions.

I hypothesize that newly built casinos within a certain distance of an existing casino have negative effects on existing casino revenues. The more tourists a casino draws the more revenue it generates. If my hypothesis is true, the economic development impacts from existing casinos will be less than expected or simply decline when new casinos open nearby. This study can inform policy makers either considering legalizing casino gaming or considering casino expansion.

The findings indicate that proliferation of casinos and competition amongst casinos has increased the desire for most casinos to become resort destinations, while practically confining many to become local serving. Particularly, governments now are more likely to prefer resort casinos, more likely to accept them in urban places, and more likely to require concessions on local hiring and economic development agreements. Casino competition has reduced the magnitude of economic development impacts of existing casinos, but in most cases the net economic development impact is still positive. There is little reason to believe or suggest that casino growth will slow down, but there is cause for concern for rural areas that are both heavily dependent on casinos and most vulnerable to casino competition.

This thesis is not about whether casinos are good or bad. Neither are societal impacts of casinos and gambling the primary subjects of concern. These are very important topics, and are addressed regularly in casino literature. Rather, the thesis examines the effects of neighboring jurisdictions competing for the same economic development base using the same strategy. Conceptually, this thesis would be very similar if the commonly chosen strategy involved convention centers instead of casinos. The nature of casino legislation, recent developments in the industry, and the growing popularity of gambling make casinos ripe for this type of analysis.

[1] "Some legislators reported that out-of-state casinos attempted to block casino legalization in Illinois." (Pierce and Miller 2004, 106)

Chapter 2: Review of Gambling and Casino Literature

This chapter reviews literature that addresses economic development within the framework of casinos and gambling. The first section discusses economic development theory and ways to measure it. Section two takes the theoretical concepts and puts them into the context of government objectives and decision making. The third section reviews research that identifies determining factors of casinos' successes as economic development tools. Finally, the last section discusses results from previous studies that determined net impacts, costs, and benefits of casinos.

Economic Development Objectives

This thesis is concerned with economic development impacts of casinos and whether they are positive, negative, growing, and shrinking. Before getting into whether or not they have changed, it is worth describing what we mean by economic development impacts. Grinols (2004, p.79) refers to economic development as the "enhancement of welfare and utility of households." Walker (citing Schumpeter 1934, p. 66) lists 5 primary sources of economic development: the introduction of a new good, introduction of a method of production, opening of a new market, new source of raw material, and a new organization of any industry. Building on this, he suggests that since both consumers and producers benefit from market transactions, an increase in the number of voluntary transactions represents economic growth, in and of itself (Walker 2007).

North states the "success of the export base has been the determining factor in the rate of growth of regions" (1955). Tiebout, using a definition of economic development based on increases in per capita income, suggests that growth can be obtained without increasing the export base (1955). He suggests that sometimes income growth can occur as a result of shifting resources toward residentiary services and away from exportable services. If people in a region were paying a lot to import recreational services (i.e. traveling to gamble), regional growth might occur if some decided to locally produce recreational services instead of exporting relatively marginal widgets. Tiebout uses goldrushers who became shopkeepers as an example. Tiebout draws a distinction between economic development and economic growth, whereas North characterizes the argument as the difference between long and short term economic growth. In North's framework, regions achieve long term growth because of a comparative advantage in producing some goods and services which can be exported to other regions.

There are a few definitions of economic development on the table: a new good, a new export base, import-substitution, or increase in welfare (represented by number of voluntary transactions).

Next we have to determine whether any or all of these things have improved and identify a way to measure the improvement. Wiley and Walker (2009) used retail property values near casinos and Wenz (2008) used valuation of residential property near casinos to estimate the changes in welfare attributable to casinos. Evans and Topoleski (2002) based their study on unemployment, total jobs and percentage of adults in poverty. Popp and Stehwien (2002) measured economic development in terms of increases in per capita income, net job growth, or declines in unemployment. Similarly, Morse and Goss (2007) investigated casino contributions to economic development as defined by job growth, income growth, and changes in unemployment rates. Given available data at the county level, jobs, income, and unemployment were used most frequently in the cited literature and will be used in this analysis.

It is important to determine *if* casinos lead to economic development, but research should and does often include arguments about *how* they do it. Gambling, and tourism more generally, can be thought of as exporting recreational services to consumers of other regions. In a review of gambling impact studies, Rose (1998) highlights the difference between two schools of thought when he contrasts restaurants and factories. Whereas restaurants are thought to serve local patrons and re-circulate money throughout a region, factories export goods and bring in outside revenue. Chhabra (2007) noted that casinos spur economic growth if they attract out-of-state money, while Walker (2007) believes that simply adding a new good to as state's consumption menu spurs economic growth. He likens additional casinos to new restaurants in a town, implying that the expansion of consumer choice results in growth. The question of whether casinos are meant for the locals or for tourists drives the politics and discussion around casino legalization, and ultimately the design and impact of casinos.

Goals of Casinos as Economic Development Tools

Grinols and Mustard (2001) outline at least nine social costs associated with casinos; so why would governments get into this racket in the first place, particularly when they could pursue development objectives through other means? Though casinos have become a popular economic development strategy, they have the additional potential benefit of raising large tax revenues that fill large budget gaps. Eadington (1999) listed five commonly cited economic benefits associated with casino gambling's introduction into a region: jobs, investment stimulation, tourism development, tax revenue, and utility gained for the consumers who enjoy gaming. Tax revenue is a strong motivation. Pierce and Miller (2004) found states with poorer fiscal health were somewhat more likely to legalize

gambling, and Elliot & Navin (2002) found that tax revenue from licensed casinos have become a staple of many state budgets. Historically, states have tried to balance the positive and negative effects by separating casinos from major population centers to protect against negative social impacts (Eadington 1998).

Casino legislation gets complicated and some of the goals become blurred. Iowa's goals were to draw tourists and alleviate stagnation in the agricultural and manufacturing sectors (Morse and Goss 2007), but:

> "One [reason for Iowa to get casinos] was particular to Iowa's situation: under the terms of the federal Indian Gaming Regulatory Act (IGRA) of 1988, a number of land-based tribal casinos were about to open in neighboring Minnesota and Wisconsin, which meant that Iowa would feel the effects of casino gambling no matter what it did (von Herrmann 2006, 29)."

With tax revenue as one of the main objectives, several studies include impacts on other government revenue, namely lotteries. Popp and Stehwein (2002) found that casinos negatively affect sales taxes, while Seigel and Anders (2001) associated increases in slot machine revenue with decreases in lottery revenue. Other studies linked casinos to more specific outcomes like distinguishing the area as a convention center destination (Spectrum Gaming Group 2009). Even though there are several ways to frame casino legalization, the discussion normally boils down to jobs and taxes.

If one approaches casinos as tax revenue generators (like lotteries) then the discussion turns to who is taxed by jurisdiction and income level. If casinos are economic development tools, then questions turn into "which tax rates applied to casinos yield the most benefit." First, casinos are placed near state borders explicitly for the purpose of attracting out-of-state patrons (Wenz 2008), though governments are increasingly inclined to license urban casinos, which tend not export gaming services to tourists (Eadington 1998). As for tax rates, industry consultants suggest that low rates lead to greater capital investment in casinos, leading to longer and more frequent visits (Spectrum Gaming Group 2009). Again, states balance the tax maximization issue with their social and political interests. Given the concern about negative impacts, in most jurisdictions taxes are earmarked for public goods: public education, infrastructure, and economic development programs (Rose 1998).

States solicit "impact studies" when casino legalization or expansion legislation is debated in an effort to weigh negating effects of casinos. Expected benefits include tax revenue, increased economic activity, employment, and positive spillovers to local business; expected costs include shifting spending

from local business and the social costs of gambling (Wiley and Walker 2009). Impact studies try to identify "new" jobs since, as Grinols and Mustard (2001) said, "there is no net gain to the economy from shifting a job from one location to another unless it increases profits."

In his review of gaming studies for the National Gambling Commission, Rose (1998) illustrated several methodological inconsistencies, some of which stem from a priori biases from both directions. For example, proponents of casino gambling argue for the inclusion of consumer welfare gains when weighing costs and benefits (Walker 2007). If the author is opposed to gambling on moral or ethical grounds, change in consumer welfare from having more recreational options is not likely to be included as a benefit in their analysis (Grinols 2004) . Conversely, proponents tend to dismiss the extent to which negative social impact can be accurately measured and included in analysis.

The incentives for bias are large due of casinos' profitability (for private firms and governments) and the stigma associated with gambling. The approach in this study is to review the effects of casino competition using the most commonly cited objectives: tax revenue, jobs, and income.

Determinants of Casinos' Success as Economic Development Tools

Casinos are becoming more urbanized, and thus serving more local clientele. In light of this trend, my analysis addresses whether or not economic development impact is still positive once the geographic reach of casinos has been limited to local areas. This section focuses on how casinos effect positive economic change, either through the choice of local versus tourist-oriented casinos, or through effects on other economic activity. As you will read, the evidence is mixed on whether casinos need tourists and whether their effects on other businesses are positive.

Some believe gambling acts as significant source of economic development if and only if it attracts visitors or gets players to play more (von Herrmann 2006). Gambling opponents have argued that if customers are local, casino development replaces other local businesses resulting in neutral economic impact (Wiley and Walker 2009). This results in displacement or cannibalization of local industry. Other research suggested that casinos foster related businesses such as hotels, restaurants, gas stations, and other entertainment in areas near casinos (Evans and Topoleski 2002). Rose (1998) wrote that even if a casino attracted only local residents, it would still generate multiplier effects through their purchases, wage payments and tax payments.

Casinos cannot be characterized as easily as either "local" or "tourist" given the politics surrounding them. We know casinos are located next to state borders so these casinos can attract out-

of-state residents. These patrons will be local in the sense that they travel relatively short distances to gamble, but they may be "tourists" in the sense they come from other states. Growth in this case may be concentrated in one area in the region at the expense of another area in the region (Gabe, Kinsey and Loveridge 1996).

Impact studies and research have identified several factors that affect casino typology (tourist versus local) and performance (more versus less revenue). An Indiana Gaming Committee report suggested that the Illinois gaming positions (number of slots and tables) limit has impeded investment at Illinois casinos. High capital investment is associated with a resort-style, tourist driven casino. Casinos have expanded to include hotels and conference centers to encourage tourism (Spectrum Gaming Group 2009). In fact, firms that depend more heavily on casino revenues, rather than other services, tend to have lower earning rates (Morse and Goss 2007). Both types of casinos have been subjected to competitive pressures from nearby casinos. Resort casinos in Niagara Falls, ON have been at a disadvantage compared to nearby properties in western New York which offer free alcoholic drinks and allow smoking (MacLaurin and Wolstenholme 2008). Obviously, casinos substitute for other casinos, which should reduce their effects. This is the point of the thesis.

The effects of casinos on other entities are expected to be largest on other forms of gambling, businesses closest to the casino, and other forms of recreation. Walker and Jackson (2008) found that casino revenues and lottery revenue in a state are negatively related. They also estimated that the presence of horse racing in adjacent states, increases casino revenues in the state in question. Wiley and Walker (2009) suggested that casinos act as complements to nearby existing businesses, given casinos' impact on property prices. Seigel and Anders (2001) found evidence of revenue displacement in entertainment and recreational services. Again, the choice of methodology can affect results, but these results are most common in the literature.

Casinos' Economic Development Outcomes

Most evidence suggests that the net impact of casinos has been positive, but there are several caveats. The expansionary effects of casino gambling on the average state have been largely diminished over time (Walker and Jackson 2007). This could be due to competition or the casino effect dissipating through the state gradually. Wiley and Walker (2009) reached the same conclusion using per capita income as their growth indicator. Morse and Goss (2007) found that commercial casinos have positive impacts on income, positive impacts on employment and negative impacts on unemployment rates. On

the other hand Grinols and Mustard (2001) found no significant differences in unemployment decline among Illinois counties that received casinos compared to counties that did not.

Tribal casinos' have had different experiences due to their legal structure and initial conditions and have received special attention in the literature. In their review of tribal casinos in Minnesota Gabe et al. (1996) found that the new tribal casinos had no significant impact on overall per capita income in their counties. Even though there were positive effects on some industries, they postulated that the industries were either too small to make an impact at the county level or that the wealth generated by the casinos was spent outside of the county. Six years later Evans and Topoleski (2002) identified a positive effect of casinos on employment to population ratio. Wacker (2006) identified benefits of Native American casinos of a different nature. He noted the construction of schools and community centers along with improvements in housing quality and renewed sense of pride. Wacker also noted the difficulty of some tribal casinos to have an effect based on their remote location and low levels of human capital. Like commercial casinos, tribal casinos prefer to locate near population centers.

The discrepancy among tribal casinos highlights the fact that casinos affect some populations more favorably than others. In reference to casinos is Tunica, Mississippi von Herman (2006) wrote:

> "Gaming revenues and the jobs it created may reduce unemployment, raise incomes, and reduce poverty to some degree but it will take many years to improve conditions that result from years of elite political and economic resistance. On the other hand, higher tax revenues induce more government spending which may result in higher income or more jobs (p. 61)."

Also, many share the opinion that casino revenues filtered through government and private business have done little to improve the lives of Atlantic City residents (Farrigan 2005). These results along with the tribal experience underscore the need where casinos exist to invest public money in areas that encourage long term economic development of people and places.

Conclusion

"Degenerate competition, or race to the bottom, has the ramification of decreasing profits and causing an inordinate number of business failures if carried too far (Rose 1998, 24)." Using related literature, this chapter has framed a discussion around economic development and how places hope to achieve it through casinos. Additionally, it has shown the enablers and inhibitors of casinos' effects along with the results in several places. Given past research results, there is potential for casinos to encourage economic development. As market saturation increases and pools of tourists shrink, potential

degenerate competition becomes a greater concern. The next chapter describes casinos' trends, styles, regulations and spatial disparity in the context of increased casino competition since 1990.

Chapter 3: Casino Trends and the Nature of Casino Competition

Casinos have changed substantially over the last thirty years, and even more since the new wave of gambling expansion in the early 1990s. The spread of gambling competition has changed the location, style, and audience of casinos. This chapter has five sections. The first goes through the chronology of casino development by region and casino type. The second section provides descriptive statistics about the qualitative changes of casinos. The third and fourth sections review casino trends by region, including statistics on individual casinos' revenue and gaming options. The fifth section compares geographic economic trends over the same period and relates regional economic performance to growth in the casino industry.

Timeline of Casino Developments in the United States

Commercial Casinos

Regulation more than any other factor determines when, where, and how casinos develop. Aside from laws addressing casinos on tribal reservations, gambling is a state issue. For years Nevada had a monopoly on gambling in the United States. Nevada legalized gambling in 1931, hoping to attract patrons from California (Morse and Goss 2007). In 1976, New Jersey legalized gambling but enacted laws that put limits on the number of licenses, the location (Atlantic City only), and minimum operating and financial requirements. New Jersey's strategy was to revive a tourist town that was suffering from economic decline (Pierce and Miller 2004, 90). The regulations raised entry barriers so that only large scale operations could open. This was designed with the idea in mind that it was easier to monitor fewer larger establishments, while limiting the industry's exposure to organized crime if many small establishments opened (Morse 2007 p. 98). Nevada, with its longer history of gaming, had by this time established a gaming regulatory structure that was better suited to monitor diffuse and widespread gaming operations; New Jersey feared small and mid-sized operators would be difficult to control. The fear of organized crime has pushed several states toward strong oversight.

For most of the 1980s, Nevada and New Jersey were the only locations where casino gambling was legal. They represent two models of casino gaming regulation. The first model is characterized by less stringent restrictions, fewer regulations, and diffuse casino gambling. Nevada with its lower taxes and lower administrative fees follows this model. A second model, involves a high level of regulation and geographically concentrated casino development. The Atlantic City-only policy implemented by New Jersey is the best example, but Colorado and South Dakota also use this model. The third model still

involves high levels of regulation, but has deliberately dispersed casino development with specific geographic restrictions. This last model was used by states that legalized casinos in the mid 1990s.

In 1989 and 1990, South Dakota and Colorado, respectively, began operating limited gambling in which either casinos are restricted in the number of on-site slot machines, casinos are restricted in the games they can offer, gamblers are restricted in how much they can bet at any one time, or some combination of the three. Commercial casinos were (and still are) restricted to one town in South Dakota (Deadwood), and three towns in Colorado (Blackhawk, Central City, and Cripple Creek). Similar to New Jersey these casinos were meant to spur tourism in towns known as destinations for their historic significance.[2]

Table 3.1 Casino Opening Dates by State

State	First Casino Year	Initial Casino Type
Nevada	1931	Land-Based Casino
New Jersey	1978	Land-Based Casino
South Dakota	1989	Limited Stakes Casino
Colorado	1991	Limited Stakes Casino
Illinois	1991	Riverboat/Dockside Casino
Iowa	1991	Riverboat/Dockside Casino
Mississippi	1992	Riverboat/Dockside Casino
Rhode Island	1992	Racino
Louisiana	1993	Riverboat/Dockside Casino
Missouri	1994	Riverboat/Dockside Casino
West Virginia	1994	Racino
Indiana	1995	Riverboat/Dockside Casino
Delaware	1995	Racino
Michigan	1999	Land-Based Casino
New Mexico	1999	Racino
New York	2004	Racino
Maine	2005	Racino
Oklahoma	2005	Racino
Florida	2006	Racino
Pennsylvania	2006	Land-Based Casino

Source: American Gaming Association Annual Reports

Beginning in the early 1990s, Illinois, Indiana, Iowa, Missouri, Louisiana, and Mississippi all began offering riverboat gambling, almost exclusively along the Mississippi and Ohio Rivers. The locations were decided based on states' intent to maximize revenue from out-of-state, rather than states' intent to focus on existing tourist destinations. In the early years of these operations, casinos were subject to restrictions as to when gambling could occur, how often the boats had to "cruise", and gambling limits per patron/trip.[3] The cruises did not last long, gradually became more infrequent, and eventually were discontinued in many places in favor of dockside gaming, where a casino facility is built on the water but does not sail. Competition amongst the states led them to relax the restrictions, and subsequently made gambling more about convenience than about tourism.

While Midwestern casinos were predominantly riverboats, *racinos* (racetrack and casino combinations) prevailed along the eastern seaboard. Delaware, Rhode Island and West Virginia each allowed their racetracks to have slot machines in the early 1990s. In each case, the slot machines were

[2] Bourie (1995, p. 119). "All of the buildings in the downtown area are required to conform with the city's authentic 1880's architecture and many of the casinos are located in historic structures."

[3] Early riverboats were required to leave the shore at some times or for part of the season because they were "cruise ships." Though cruise ships are expected to cruise somewhere, this policy was intended to limit gaming opportunities of individuals prone to be problem and pathological gambling.

controlled by the states' lottery systems. Whereas the casinos in other regions tried to be tourist-oriented, racinos were expected to be patronized by locals, or 'convenience gamblers', and were designed more explicitly to raise tax revenue (West-Virginia-Interviewee1 2010). States with racinos normally dedicated a percentage of the adjusted gross revenue to the support of the racing industry.[4] For states that depended on racing for economic health, racinos were means of supporting a declining but regionally important industry. A basic casino nearby could have hurt this industry if the two types of gambling are substitutes. Slots at the track complemented the racing (through larger purses) and protected an industry of local significance.

Land-based casinos are the most recent trend. Michigan (1996) and Pennsylvania (2004) passed state laws allowing a specific number of casinos (American Gaming Association 2009). In Michigan, the commercial casinos were all placed in Detroit. In Pennsylvania, the licenses were distributed to the state's major cities. Michigan's introduction of commercial casinos broke their pre-existing compacts with Native American tribes (Hill 2009). As a result, the tribes reverted to paying 2% of their adjusted gross revenues to the state, instead of the 10% they had been paying prior to 1999. Unlike racino states of the early 1990s, gambling was already present in the regions of the new casino states of Michigan (tribal and Ontario casinos) and Pennsylvania (New York tribal casinos and West Virginia, New Jersey and Delaware casinos). This is also true of New Mexico, New York and Oklahoma (tribal casinos). Since, casino gambling was already prevalent, the deliberative question in these places was more about "how" rather than "if."

Late adopting states benefited from the trial and error of other states. They designed their taxes to entice more investment into new casino markets. They added restrictions on the employee hiring, in-state suppliers, and local community agreements. They seemed to be less morally or ethically bound when it came to limiting the harm gamblers could self-inflict. This last point concerns the casino location decisions of state regulators. Whereas early casinos were relegated to rivers (riverboats casinos), rural areas (most tribal casinos), or tourist destinations (Atlantic City, Deadwood, and Colorado casinos), casinos have gradually moved closer to urban areas and even into downtowns of major cities (Detroit, Pittsburgh, Philadelphia). Either the worry around gambling's negative spillovers to nearby areas has

[4] State gaming commissions. For example, Indiana, Ohio, Pennsylvania, and West Virginia each direct portions of gaming revenue to horse racing funds.

subsided, or regulators now believe the benefits outweigh the costs. In any case, casinos are a bigger part of the urban landscape than they have ever been.[5]

Tribal Casinos

While commercial casinos were only legal in Nevada and Atlantic City, a growing number of Indian casinos had begun operating under ambiguous legality by the end of the 1980s. The Indian Gaming and Regulatory Act of 1988 (IGRA) set up legal and regulatory framework for states and Indian tribes, some of whom had been conducting gaming activity since the late 1970s.[6] Under the legislation, tribes needed approval from the host state, the National Indian Gaming Commission, and the Department of Interior to establish Class III gaming facilities (United States General Accounting Office 1997). The regulation required tribes and states to negotiate compacts that reflected their mutual interests. The tribal casinos were not obligated to report earnings or to pay taxes to state governments as a matter of law, but depending on a tribe's compact with the state, their casino often agreed to pay a percentage to the state or locality, sometimes conditional on the state's exclusion of commercial casinos.

Figure 3.1 Tribal Casinos 1995

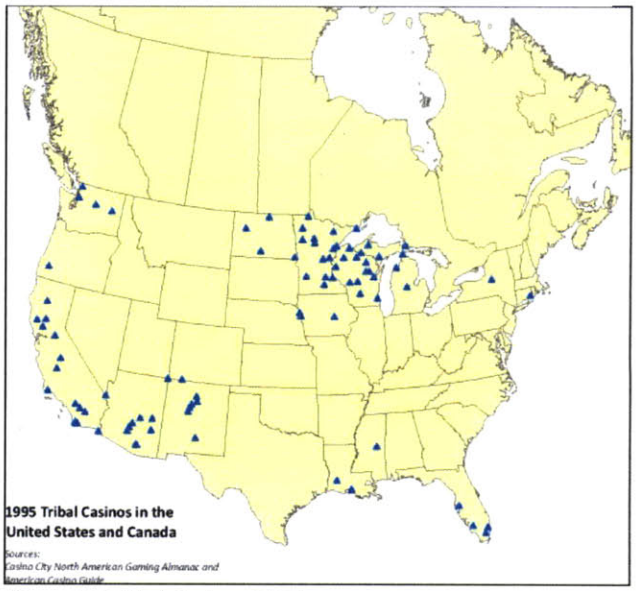
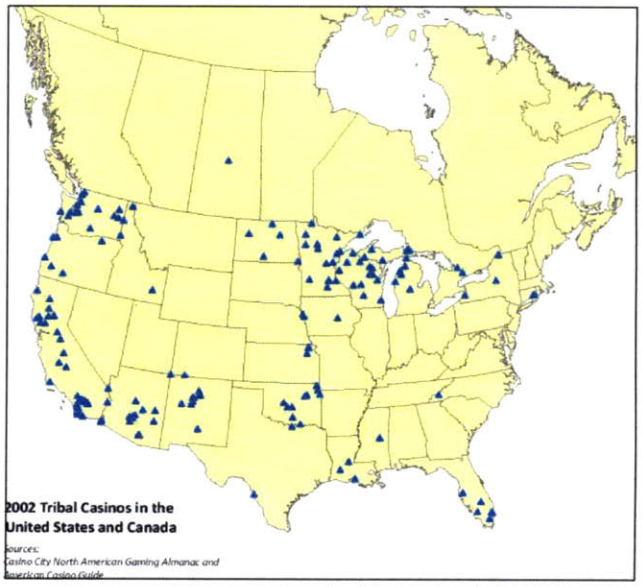


Figure 3.2 Tribal Casinos 2002

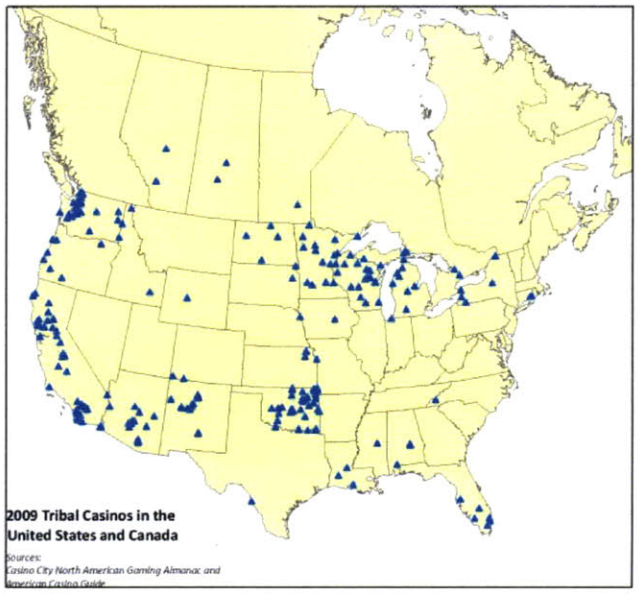


[5] As of 2010, the cities of Boston, Chicago, Cincinnati, Cleveland, and Columbus were either considering or planning the construction of urban casinos.

[6] IGRA established three classes of gaming. Class I consists of social or ceremonial gaming. Class II gaming includes bingo, pull-tabs, and punch boards, as long those games are legal under state law. Class III includes casino games, slot machines and pari-mutuel betting.

Under the IGRA, if a type of casino gambling was legal in the state (even if just for charitable purposes), tribes could operate that type of gaming on their own land. For Native American tribes, casinos represented a valuable opportunity. Tribes could "sell a product", that was unique to them because gambling was prohibited in surrounding areas. Though Native American gambling had been growing since the late 1970s (United States General Accounting Office 1997), the new law legitimized the establishments that had been operating and eventually allowed well known private casino companies to operate tribally-owned facilities. As of 2002, approximately 170 tribal casinos were in operation[7] (Evans and Topoleski 2002); by 2009 that number had grown to 250. Since 1995, tribal casinos have accounted for over half of all casinos in the country. Figures 3.1, 3.2, & 3.3 show the growth in tribal casino gaming over time and by region.

Figure 3.3 Tribal Casinos 2009



Tribal casinos differ from commercial casinos along several dimensions. Most notably, tribal casinos are overwhelmingly located in rural areas, even though some tribes have attempted to position their casinos near urban areas. Secondly, unlike commercial casinos, tribal casinos are less frequently restricted by regulatory limits on size. They can build casinos as big and bright as they choose. The fees/taxes they pay are lower than taxes for commercial casinos leaving greater profits and more potential for investment into the casino properties. Lastly, though they are normally geographically limited only to areas on the reservation, within the reservation they have more latitude for casino placement.

The somewhat random location of reservations led to disparate placement of tribal casinos throughout the country and led to the introduction of gambling sooner than it would have otherwise appeared. The presence of tribal gambling eventually affected states' placement of casinos and goals of state gambling laws.

[7] Evans, et al (2002) report in their paper that, as of 2002, more than 200 Indian tribes operated 310 gaming facilities. This figure presented in this text does not include Class II gaming facilities.

Casinos' Shifting Characteristics

Along with the location and type, characteristics of individual casinos have also changed over time. With the progression of competition, just being in existence is no longer enough to remain viable in many regions. Amenities and a variety of gaming options determine which casinos are most successful, and consequently which places receive more benefits from their casinos. While this section is meant to be descriptive, it also sets the stage for the quantitative analysis in future chapters and introduces standardized definitions.

The thesis examines the effects of competition on casinos and localities in states that have legalized casino gambling. When choosing criteria to delineate what is and is not a casino, I deliberately chose numbers that ensured each of the commercial casinos remained in the sample. The identification of some locations as non-casinos was necessary because some jurisdictions allow slot machines practically everywhere and some casino guides list every location where gambling is available as a casino.[8] I exclude gambling locations from the set of casinos based on the following qualification: a facility is a casino if by combining a) its total number of slot machines and b) five times the number of table games it surpasses 400 *gaming positions.* If

(Total Slot Machines + (5 * Total Table/Poker games) >= 400)

is true, the facility is a casino**.** Cruise ships, small card rooms, small slot parlors or properties whose primary purposes were not gaming were not considered casinos for this study. Either they require little investment, have small effects, or offer gambling only at intermittent times.[9][10][11] Data is also more difficult to gather given the size or lack of jurisdiction in the case of international cruises. Casino City's North American Gaming Almanac and the American Casino Guide are the sources for all casino charts.

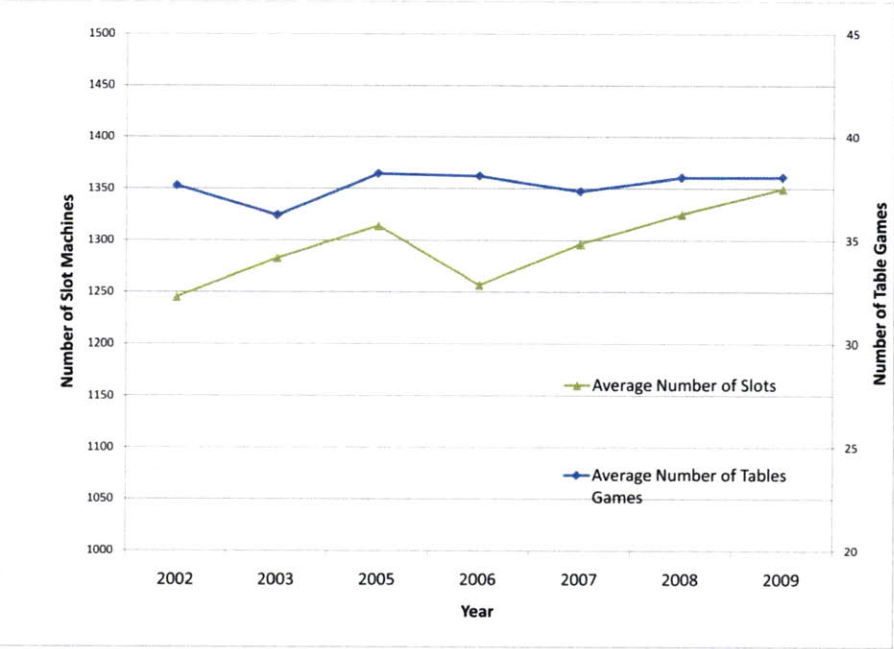
[8] This can include gas stations where owners may have up to 5 slot machines on the property.

[9] In 2002, 88% of all slot machines in North America were in casinos with at least 400 slot machines. By 2009, this increased to 91%. Statistics based on *Casino City's North American Gaming Almanac, 2009-2010.*

[10] In 2002, 34% of all table games (including poker tables) in North America were in casinos with at least 80 table games. In 2005, this increased to 40%. Statistics based on *Casino City's North American Gaming Almanac, 2009-2010.*

[11] The cruise ships of Iowa, Illinois and Indiana are included however because their location and operation was consistent. They eventually docked permanently.

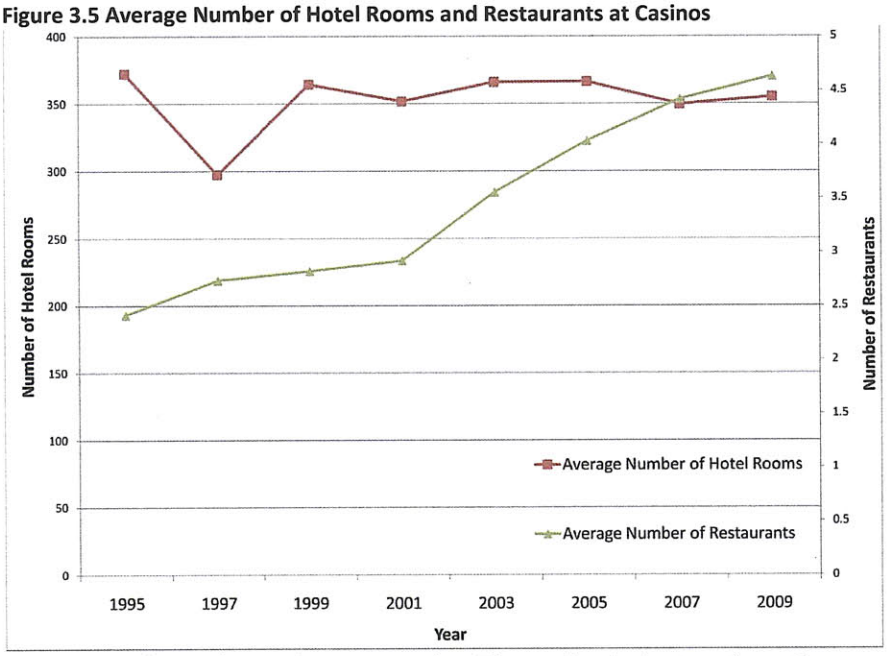
Figure 3.4 Average Number of Slot Machines and Table Games at Casinos



The physical growth of casinos from slot parlors, to casinos with slots and tables, to full-blown casinos with gaming, attractions, and hotels has been incremental. Even as the total number of casinos has grown, the percentage of them that offers table games (poker, blackjack, etc.) has increased steadily over time. This has not led to an increase in the average number of table games at one location since 2002 (Figure 3.4). Over the same period of time the average number of slot machines has increased by about 100 machines per casino. From a jobs perspective, table games are preferable because they involve more labor in the form of dealers (Spectrum Gaming Group 2009). From a tax perspective, slot machines bring in more revenue. Regardless of competing perspectives, casino operators prefer to have both and see them as complementary, in the sense that one increases demand for the other.

Dining and lodging are two commonly cited industries positively affected by casinos (Gabe, Kinsey and Loveridge 1996). Aside from the slot machines and table games available, restaurants and

Figure 3.5 Average Number of Hotel Rooms and Restaurants at Casinos



hotels are the primary draws for casino properties. The casino industry views these services as complements to gambling and often offers them for free or reduced prices based on frequent gambling. As competition intensifies, casinos add these amenities to distinguish themselves. In 1995, 26% of casinos had hotels.[12] That percentage has grown steadily over time as casinos have upgraded. Now, over half (52%) of casino properties possess hotels. While the number of hotels has increased, the average number of rooms has decreased slightly (Figure 3.5). This could be due growth in smaller casinos opening hotels proportionate to the size of their regional market. In 1995, casinos averaged 2.41 restaurants on-site. That figure had nearly doubled by 2009. However, growth in hotels and restaurants is not always a positive economic development impact, since these new establishments potentially displace pre-existing local hotels and restaurants in the region.

In addition to restaurants and hotels, casinos increasingly host entertainment venues and convention centers. This growth parallels the industry's rhetoric which tries to shift the focus from gambling to entertainment. In 2002, 156 non-Nevada casinos had convention space on-site, and 329 non-Nevada casinos had entertainment venues. By 2009, 259 casinos had convention centers and 471 had entertainment venues. Among the categories discussed in this section convention centers are

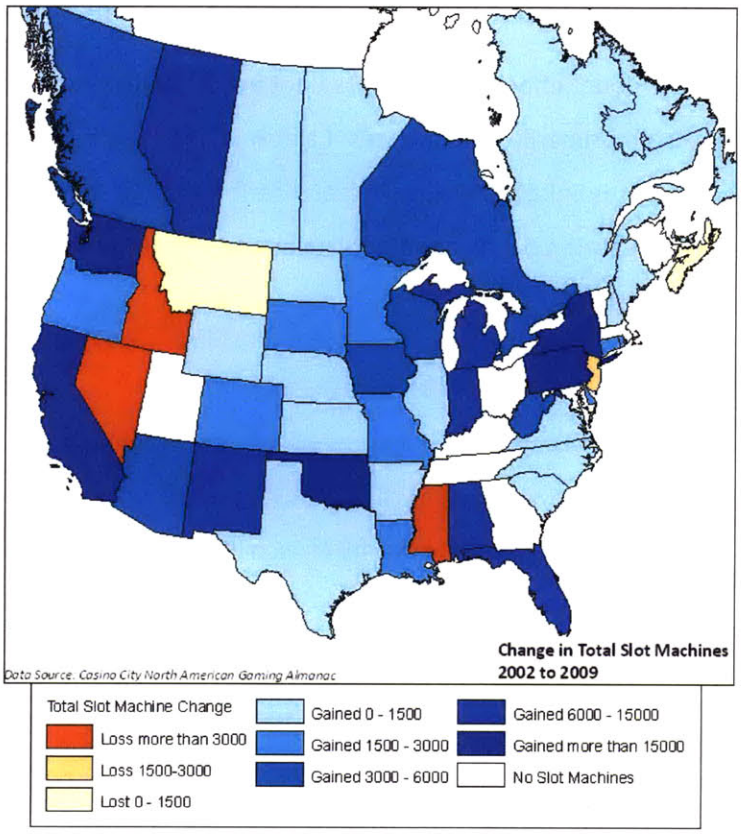
[12] All statistics about casinos in this section relate to Non-Nevada casinos due to data collection issues surrounding Nevada properties.

probably not the first things that come to mind when one thinks of casinos. However, due to competition to become regional destinations, these amenities along with spas and golf courses, are areas of growth within the industry.

Casino Growth by Region

Casinos have developed disproportionately across the country, largely due to state regulation changes. However, a substantial part of the growth appears to be incremental, with existing casinos upgrading their properties. Incremental changes vary geographically since the pressure to upgrade is greater in areas of competition, and since the rewards of upgrading depend on regional demand. This section illustrates the "zero-sum" competition that goes on between states.

Figure 3.6 Change in Total Slot Machines by State



In the previous section, we saw that on average casinos added 100 slot machines from 2002 to 2009. On a statewide level (Figure 3.6), almost all states saw increases in the number of slot machines. Interestingly, over this period states with well established gaming markets saw declines in the total number of slot machines: Nevada, New Jersey, and Mississippi.[13] Each of those states saw declines of over 2,500 (over 11,000 for Nevada) slot machines over the period. That represented about a 6% drop below the 2002 figures. Also, each of the three is located in a region where a neighboring state or states

[13] In 2002, Nevada, Mississippi, California, and New Jersey were the top 4 slot machines states, respectively. By 2009, California and Oklahoma had surpassed Mississippi in total slot machines.

added a significant amount of slot machines. Though this information does not prove anything, it does suggest that expansion in one state slows, if not reverses, the growth of nearby states:

- California casinos added nearly 25,000 slots, in contrast to Nevada's loss.
- Pennsylvania and New York casinos combined added around 41,000 slots, compared to New Jersey's loss.
- Alabama and Florida added a combined 25,000 slots and Oklahoma added 50,000 slots (though Oklahoma may not represent direct competition with Mississippi).

The "next-door" effect is not as prevalent in the table game trends though large additions in table games occurred primarily in two states: California and Oklahoma. The growth of both slots machines and table games is linked to the expansion of tribal casinos within both states. Also, the largest positive changes in convention centers and entertainment venues were associated with states that have a large tribal casino presence.

Individual Casino Revenue Characteristics

The house always wins but some houses are winning more than others. States with limited gaming, cruising requirements, or capacity limits, have smaller casinos and lower revenue at each casino. Revenue depends on the facility (which is why so many are upgrading), proximity to large pools of convenience gamblers, and the ability of the casinos or the region to market itself as a tourist destination. Casinos have higher revenue when they do not compete with nearby casinos. The following charts show casino revenue by region over time. The point is that when new casinos enter into a regional market (normally from other states), competition results in the existing casinos losing revenue.

Table 3.2 Average Revenue per Casino ($Millions)

	1990	1993	1996	1999	2002	2005	2008
New Jersey	$367.5	$371.8	$395.6	$406.8	$396.4	$418.2	$374.8
South Dakota[a]	$20.9	$55.3	$54.1	$50.9	$66.6	$79.5	$91.0
Illinois		$91.0	$140.8	$147.3	$220.9	$199.9	$158.1
Iowa		$15.4	$67.7	$81.0	$81.0	$85.1	$71.5
Colorado[a]		$102.1	$166.7	$200.9	$256.1	$247.9	$233.8
Connecticut		$342.1	$415.4	$718.1	$825.1	$842.0	$712.5
Rhode Island			$53.9	$91.1	$152.5	$199.6	$216.6
Missouri			$88.8	$122.3	$131.9	$145.6	$131.9
West Virginia			$19.6	$55.8	$161.7	$223.6	$203.6
Indiana			$76.5	$202.8	$223.8	$241.7	$186.0
Delaware			$76.5	$161.2	$204.8	$193.1	$178.1
Michigan			$72.9	$55.7	$176.6	$168.0	$167.6
Maine						$4.2	$45.8
Pennsylvania							$193.8

a - Total adjusted gross revenue by county
Figures are presented in 2005 dollars

Source: State Gaming Commission websites

Figure 3.7 Annual Casino Revenue: New Jersey, Eastern Pennsylvania, Delaware, and Connecticut Casinos

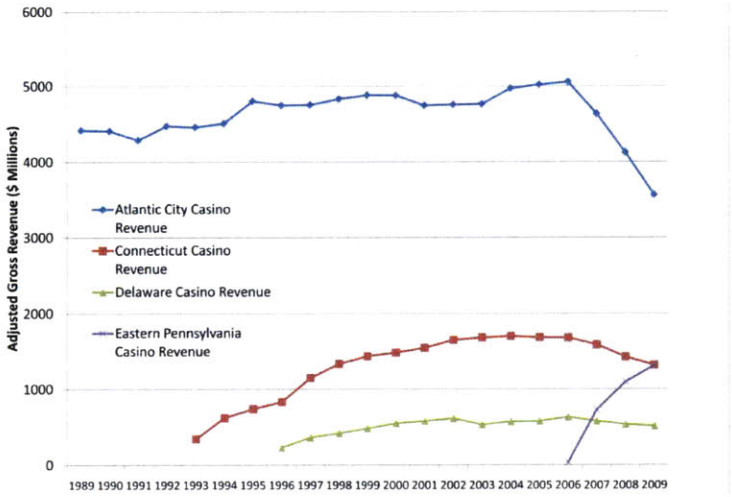


Figure 3.8 Annual Casino Revenue: Northeast Illinois, Southwest Michigan and Northwest Indiana Casinos

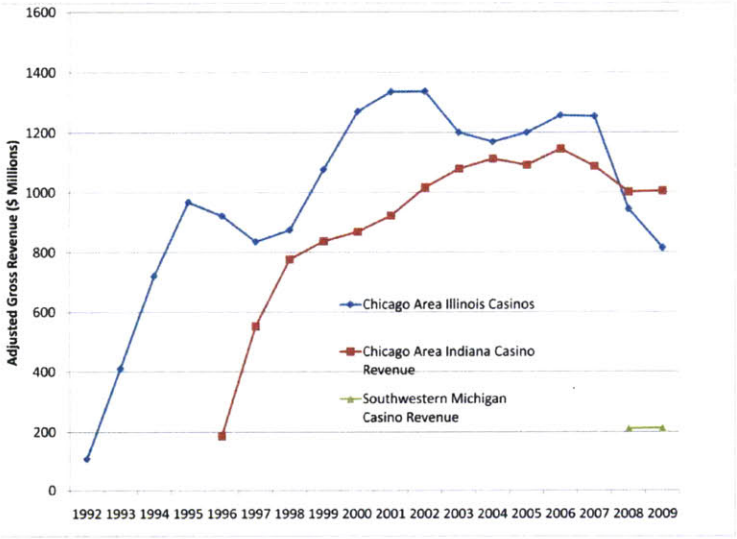


Figure 3.7 shows the total revenue for all Atlantic City casinos since 1989. There is a slight upward trend for most of the 20-year period, even when Connecticut's tribal casinos and Delaware's racinos opened. However, when the casinos/racinos in Eastern Pennsylvania opened, the Atlantic City casino revenue fell sharply. Part of this decline is due to national economic conditions (Connecticut's revenue also declined) (Dadayan and Ward 2009)[14], but Atlantic City's fall began in 2006 and is more drastic than other regions' decline.

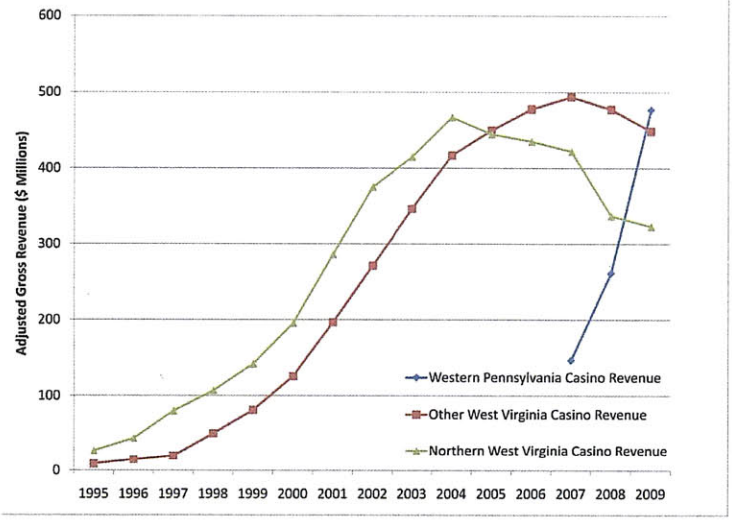
Figure 3.8 shows the same information for casinos in the Greater-Chicago region, but in this market, revenue ebbed and flowed. Illinois casino revenue fluctuates both because of introduction of new casinos and policy changes. After an initial steep increase in revenue, the first Indianan casinos opened and Illinois' revenue declined. From 1998 to 1999, the Illinois casinos saw another rise in revenue. This time it was most likely due to open boarding (end of cruising requirement) (Garrett and Pakko 2009).[15] In 2002, Indiana followed suit by removing its cruising requirement and again, Illinois revenue fell. In 2008 a Michigan tribal casino with 3,000 slot machines, 100 table games, and hotel opened right on the Indiana/Michigan

[14] Dadayan and Ward, 2009. From 2008 to 2009, 28 of 41 states reported declines in gambling revenue.
[15] In a study of the smoking ban's effect on revenue performance, the authors included a set of dummy indicators intended to capture the effects of policy changes that affected casino revenue.

border within minutes of Interstate 94. Both Indiana's and Illinois' casinos seem to have suffered as a result.

Figure 3.9 shows the revenue history for two racinos in the northern panhandle of West Virginia, which primarily serve customers from southern Ohio and western Pennsylvania,[16] compared to the other two racinos which are farther south and closer to the capital city of Charleston, WV. In 2007, casinos opened in Erie and Washington counties. In 2009, a casino opened in downtown Pittsburgh, the largest city in the region. While casinos in southern West Virginia saw modest declines in casino revenue (likely due to general economic trends), the northern panhandle casinos seem to have been significantly affected by the new Pennsylvania casinos. By 2012 casinos will open in Ohio (Guillen 2010), negatively affecting another customer base of West Virginian casinos.

Figure 3.9 Annual Casino Revenues: Northern West Virginia, Western Pennsylvania, and Southern West Virginia Casinos



Clearly, nearby casinos negatively affect existing casinos' revenues, and this might be of interest to those who stand to lose their jobs. The economies of Atlantic City and northern West Virginia are more dependent on the casino industry for taxes and employment than Philadelphia and Pittsburgh. As casinos open in urban places, they supplant the rural and suburban casinos that have less industrial diversity and fewer employment options.

Casinos and Local Economic Trends

One of the underlying assumptions of this thesis is that counties, cities, and tribal governments expect to see positive returns from having the casino. While the states reap the tax benefits, the areas hosting casinos expect to see localized impacts, both positive and negative. In some states (Indiana, Mississippi) the ultimate decision of casino legalization rests with local voters. This section compares the counties that have casinos to those that do not with two questions in mind:

- Are the two sets substantially different, in terms of initial conditions?

[16] Information obtained from West Virginian Interviewee.

- Has the set of counties with casinos seen the benefits for which they were hoping?

The section concludes by suggesting some preliminary relationships and evidence that previews the upcoming quantitative chapters.

There were 100 more counties in 2007 that were home to a casino than there were in 1997 (Table 3.3). For every county that had a casino, there were about four that bordered at least one county that had a casino. The idea of "border" counties will come up more often as discussion of proximate competition develops. Nearly half of all counties with a casino bordered another state, reflecting the objective to "sell gambling" to people in other states. Demographically, counties with casinos (Table 3.4) tend to be more populous and growing at a faster pace than counties without them. Ethnically, there are no major discrepancies except for the proportion of American Indians, which is not unexpected since casinos are disproportionately located on reservations.

Table 3.3 Casino Counties and Border Counties

	1997	2002	2007
Number of counties with a casino	151	195	251
Number of counties that bordered a county with a casino	591	735	934
Counties in sample	3078	3078	3078

Source: Casino City North American Gaming Almanac

Table 3.4 Demographics by Casino County Status

	Casino Counties (2007)	Non-Casino Counties (2007)
Median Population	62,788	22,916
Percentage with High School Education (2000)	80.2%	77.1%
Percentage with High School Education (2000)	18.90%	16.20%
Percentage Population Change: 1990 - 2000	14.2%	10.8%
Percentage of Counties on a State Border	47.8%	37.1%
Race		
White	79.2%	85.0%
Black	7.8%	8.7%
Asian	1.3%	0.8%
American Indian	5.5%	1.6%
Some other race	6.3%	3.9%
Ethnicity		
Latino (of any race)	8.8%	6.0%
Counties in sample	251	2,827

Source: Bureau of Economic Analysis, U.S. Census Bureau

Jobs are a major part of the argument for casino legalization. Places that depend on declining industries may be more likely to want casino jobs. Table 3.5 shows employment by major sectors in the initial years of the two research periods (1997-2002 and 2002-2007). Though the manufacturing and retail sectors saw declines over the period, counties with casinos are not drastically different from those without casinos. Government employment is higher in casino counties, while non-casino counties have larger manufacturing sectors. Government employment is not as sensitive to macroeconomic

conditions; higher employment in non-governmental sectors could be indicative of stronger local economic conditions in non-casino counties.

In most respects casino counties are not that different from other counties, but how have the two sets changed over time? Table 3.6 shows three economic indicators, their baseline levels and subsequent change over the two study periods. In all years, both unemployment and per capita income is higher in the casino counties. When unemployment increased from 1997 to 2002, the rate for casino counties did not rise as high as the rate for non-casino counties. When unemployment decreased from 2002 to 2007, the rate for casino counties fell more steeply than it did for non-casino counties. There could be many reasons for this (urban/rural differences, more educated populations, upward economic trends regardless, etc.), but for casino proponents, so far so good. The more striking numbers are in the total job growth and per capita income growth. During both periods, job growth in non-casino counties lagged behind job growth in casino counties. Also, per capita income increased by about $600 more in casino counties during both periods.

Table 3.5 Industrial Composition by Casino County Status

	Casino Counties	Non-Casino Counties	Casino Counties	Non-Casino Counties
	1997		2002	
Employment by Sector				
Government	19.3%	16.4%	19.4%	16.7%
Manufacturing	10.4%	13.8%	8.4%	11.6%
Retail	16.7%	16.0%	11.1%	11.1%
Finance, Insurance, & Real Estate	5.8%	5.1%	6.2%	5.7%
Construction	5.6%	5.7%	6.0%	6.3%
Counties in Sample	151	2,926	195	2,883

Source: Bureau of Economic Analysis

Table 3.6 Economic Indicators by Casino County Status

	Casino Counties	Non-Casino Counties	Casino Counties	Non-Casino Counties	Casino Counties	Non-Casino Counties
	1997		2002		2007	
Unemployment Rate	6.1%	5.5%	6.3%	5.7%	5.2%	4.9%
Per Capita Income	$21,767	$20,211	$25,547	$23,939	$32,508	$30,115
Change in Unemployment Rate			*0.13%*	*0.20%*	*-0.96%*	*-0.88%*
Total Job Growth*			*7.67%*	*4.81%*	*8.45%*	*6.78%*
Change in Per Capita Income			$4,322	$3,713	$6,813	$6,221
Counties in Sample	151	2,927	195	2,883	251	2,827

**Total Job Growth = (Change in Total Jobs)/Total Jobs in Previous Period*

Source: Bureau of Economic Analysis

The casino industry is growing partly because elected officials see information like Table 3.6 and hope to obtain those types of results for their home jurisdictions, in a relatively short amount of time. If they believe casinos will benefit their constituents and spur local economic development, you cannot blame them for trying. Increasingly cities and counties in close proximity to each other pursue this same strategy. Are the benefits of one coming at the expense of another or are we actually witnessing economic growth?

Chapter 4: Casino Competition Effects on Casino Performance

Now for the fun stuff: the quantitative analysis. The choice of indicator is guided by what one expects of casinos, but in almost every situation casinos are expected to bring in extra tax revenue. Adjusted Gross Revenue is the best measure of tax revenue since states and localities receive a portion of the casino revenue. I use regression analysis to characterize the effects of several factors on casino performance. The results show that:

1. Proximity to major metropolitan areas gives casinos a competitive advantage.
2. There are agglomeration effects when casinos cluster, but beyond three miles the casinos actually hurt each other if they are in close proximity.
3. Having more amenities helps.
4. Casino revenue goes through an initial growth period, but the growth flattens out over time.

Quantitative Model for Casino Performance

The arguments about effects of added casinos relate to saturation and "recapture." Saturation occurs when there are so many casinos that all of them essentially are convenience casinos. Recapture occurs when a casino opens and attracts local clientele that used to gamble at nearby casinos in other states. This happens because the new casino is closer to some customers, it has more to offer, or simply because people like the variety. When the original casino loses customers, it can lose money, cut costs, or invest and make its casino more attractive.[17] Either can involve changes to economic development outcomes, but the thesis is concerned with the overall effect of new competition. Since casino success is believed to depend on tourists, most of the investments are designed either to attract more tourists or to get tourists to spend more money when they come. If the region is not otherwise a tourist area, greater investments in tourist attractions may not be feasible and may not occur.

Casinos do not always have this effect, however. On one hand they could be by miles apart, splitting a customer base, or they could be within walking distance of each other and sharing the same customer base (along with parking facilities, security, etc.). To one customer, seeing two casinos, each with 2,500 slot machines, next door to each other, may be the same as seeing one big 5,000 slot machine casino. When casinos are "clustered", it is possible that they complement each other, with more variety in restaurants, entertainment and gambling options. The *area* is the "destination" instead of any one casino. Examples of this can be seen in Atlantic City, NJ; Niagara Falls, ON; and obviously Las

[17] Two riverboats in Indiana recently renovated their properties in response to mounting competition from Michigan Tribal casinos and potential competition from Ohio.

Vegas, NV. On the other hand, once the casinos are separated by a certain distance, the casinos' characteristics affect where people choose to gamble, since it is harder to visit both during the same trip. Hence, the analyses focus on each casino's offerings and pay attention to the attributes of nearby competitors. For example, some people drive past older casinos to get to newer, palatial casinos even if they are relatively close to each other.[18]

I should note that casino performance does not directly translate into community impact for several reasons. First, just because the casino gets more revenue does not necessarily mean the community sees any more benefit. Second, even if states collect more taxes, local investments and disbursements do not necessarily increase. Third, the presence of hotels, restaurants, multiple gambling options, and other attractions influence the casino's total employment and ultimately its profit but not necessarily its gaming revenue. States are not necessarily partners of casinos, but casino proponents try to convince them otherwise (Spectrum Gaming Group 2009, 7). Regardless, gambling dollars are very important to many local and state budgets, so states do have an interest in seeing their casinos do well.

From a public perspective, it makes sense to examine the payments the states and municipalities actually receive. From an economic development standpoint, the viability of the entity and the commerce it generates are also concerns. I chose to examine **Casino Adjusted Gross Revenue** because it is reported consistently from several sources, all casinos use some form of it, and in most cases it is directly proportional to state payments. Adjusted Gross Revenue (AGR) equals the total amount wagered by gamblers minus the total amount won by gamblers. In most states the taxes are based on this amount, unlike most industries where taxes are based on profits. The higher the AGR the more taxes the state receives.

Table 4.1 outlines the characteristics that I expect to affect casino revenue. The variables describe aspects of the local area, state regulation, national (macroeconomic) trends, individual casino attributes, and the attributes of the nearby casinos. Their source and predicted relationship with revenue are also included. The data covers casinos that reported adjusted gross revenue from 1995 through 2009.This excludes most tribal casinos since they do not have to report their revenues or pay taxes, though all tribal casinos are included in the analysis in situations where they compete with commercial casinos. Below, I briefly describe the causal or incidental relationships with AGR of each variable group.

[18] Indianan-Interviewee2. The opening of a tribal casino in south western Michigan has negatively affected the casino in Michigan City, IN even though the Indiana casino is closer to most patrons.

Slots machines, table games, and hotel rooms are the most commonly reported features of casinos and are expected to have the biggest effects on revenue. Slot machines (*slots)* are relatively cheap to operate compared to table games (*games*), while hotel rooms (*rooms*) allow gamblers to stay longer and spend more. Greater amounts of all three should lead to higher revenue and employment.

Table 4.1 Variable Definitions and Expected Effect on AGR

Variable	Description	Source	Effect on AGR	Coverage
Casino Characteristics				
Rooms	Number of hotel rooms on the casino property	Casino City	+	2002-2009
Hotel	Equals 1 if the casino has a hotel; Equals 0 otherwise	Casino City	+	1995-2009
Slots	Number of gaming machines	Casino City	+	2002-2009
Games	Number of table games and poker tables	Casino City	+	2002-2009
Restaurants	Number of restaurants on-site	Casino City	+	1995-2009
EntVenues	Number of entertainment venus on site	Casino City	+	2002-2009
Tribal	Equals 1 if the casino is a Native American casino; Equals 0 otherwise	Casino City	*	1995-2009
Racino	Equals 1 if a race track is attached to the casino; Equals 0 otherwise	Casino City	-	1995-2009
Convention_sqft	Amount of convention center area	Casino City	+	2002-2009
Other Casinos				
Casino_within3	Number of casinos within a 3-mile driving radius	Casino City	+	1995-2009
Casino_3to50	Number of casinos within a 3-50 mile driving radius	Casino City	-	1995-2009
Casino_50to100	Number of casinos within a 50-100 mile driving radius	Casino City	-	1995-2009
Closest_CasinoDist	Distance to the closest competing casino	Casino City	+	1995-2009
Dist_DisAdv	Distance to the closest major metropolitan area minus the distance to closest casino to that metropolitan area	Casino City	-	1995-2009
TotalSlots_within3	Total competing slot machines within 3 miles of casino	Casino City	-	1995-2009
TotalSlots_3to50	Total competing slot machines within 3-50 miles of casino	Casino City	+	1995-2009
TotalSlots_50to100	Total competing slot machines within 50-100 miles of casino	Casino City	-	1995-2009
TotalGames_within50	Total competing slot machines within 50 miles of casino	Casino City	-	1995-2009
Locality Information				
Population_within50	Total Population within 50 miles of the casino	U.S. Census	+	2000
Regulatory				
HighestTaxRate	Highest statutory tax rate imposed on AGR	State websites	-	1999-2009
AdmisTax	Equals 1 if the state imposes an admission tax	State websites	-	1995-2009
Smoking	Equals 1 if the state prohibits smoking in casinos; equals 0 otherwise	State websites	-	1995-2009
National Trends				
Yearly_trend	Equals the number of years the casino has been operating		+	
Yearly_trend_sq	Equals the square of the number of years the casino has been operating		-	
Firstyr	Equals 1 if the casino is in its first year ; Equals 0 otherwise	State websites	-	1995-2009
UnemploymentRate	National Unemployment Rate	BLS	-	1995-2009

Universe: All casinos that reported Adjusted Gross Revenue Annually 1995 - 2010

Sources: Casino City's North American Gaming Almanac, Bureau of Economic Analysis (BEA), United States Census, Bureau of Labor Statistics, State gaming commission websites, American Casino Guide 1995-2007

For every casino in the sample, I include its attributes plus the distance to its closest competing casino (*CloseCas_dist)*. If Casino Hunter is 10 miles away from a large casino with tons of gaming

options, Casino Hunter will likely be negatively affected. Similarly if guests can stay overnight at the other casino, Casino Hunter should also lose business. If both casinos have hotels, the effects of each casino's hotel rooms should cancel each other out. The farther away from Casino Hunter the competitors are, the less likely they will have an effect. Having more competitors within convenient driving distance results in lower "prices" and lower revenue. *TotalSlots_within3, TotalSlots_3to50, TotalSlots_50to100,* and *TotalGames_within50* control for the relative quality of the casinos within comparable distances. As discussed earlier, having a large number of casinos within "walking" distance (3 miles) is expected to positively affect revenue.

As a casino town becomes a destination, specialized businesses emerge to support the industry and complementary businesses spring up. Restaurants, entertainment venues and convention centers are uses that often co-locate near casinos (Spectrum Gaming Group 2009, 58). *Racinos* are often racetracks that have been renovated to accommodate slots. They tend to be convenience casinos and should have less revenue. Though casinos try to attract tourists, having a large population of convenience gamblers a short driving distance away positively affects revenue (*Pop_50miles*).

I include three regulatory variables since they have been shown to affect casinos' performance (Garrett and Pakko 2009). High tax rates (*TaxRate)* imposed on casinos are expected to discourage investment of the properties and ultimately affect the competitive position of the casino. Also, some states impose an admission tax on casinos (*AdmisTax*) in addition to their gaming tax. Lastly, I control for the effects of smoking bans (*Smoking*) some states have enacted at their casino properties.

The final set of variables represents temporal changes. The economic downturn beginning in the late 2000s seriously affected several gaming entities, leading casinos to cut back expansion plans and in some cases employment. Even amid these economic conditions, new casinos opened. I include data on the national unemployment rate (*Unempl*) to separate general trends in the North American economy from the effects of increased competition from new casinos. Lastly, the casinos are working out kinks during the first year (*FirstYr*), and their revenue reflects this startup period.

Data Sources

Data came from four sources. The comprehensive attributes of casinos come from Casino City's North American Gaming Almanac, but their information only goes back to 2002. The almanac has information on all types of gaming including Tribal casinos and Canadian casinos. I used the American Casino Guide (1995 – 2007) to complement the data from the Gaming Almanac. This source, a tourist

guide, listed every casino by state and type, and included general attributes for every property that was in operation for the year. State gaming websites listed gaming revenue information from the date of each casino's inception. Revenue was reported at least for every year, but often for each month for each casino. Unfortunately, some states report by region and not by individual casinos (e.g. Cripple Creek, CO casinos collective AGR instead of each casino's AGR). This data source, though direct, is limited to casinos that are required to report to the agencies. Using this method, I collected information of over 100 casinos and racinos across 14 states dating back to 1980. I use Ordinary Least Squares (OLS) regression to estimate the model and statistical methods designed for panel data. First I use a long panel data set from 1995 to 2009 with an abbreviated set of explanatory variables, and then I redo the same analysis using a shorter time period (2002-2009) but with more explanatory variables.[19]

Competition Effects on Casino Revenue

In Chapter 3, it seemed casinos were trending toward urban areas, with lots of amenities. It turns out that these characteristics play a huge role in predicting a casino's revenue. Table 4.2 shows the results from the full panel. With annual AGR as the dependent variable, the number of casinos within a 3-mile driving distance was positively associated with revenue. This is due primarily to the very big casinos in Atlantic City; if they are excluded, the number of casinos within a very short distance does not significantly affect AGR. Though it mainly applies to Atlantic City, this result does support the notion that within close proximity competing casinos can complement each other because they can be visited during the same trip. The close proximity results suggest that agglomeration effects are applicable to casinos. The other distance variables, *Casinos_3to50* and *Casinos_50to100*, are both negative. Casinos 3 to 50 miles away appear to draw from each others' base, and unlike those in the close proximity case, this is an unambiguous result. The number of casinos within 100 miles has a negative effect, but it is smaller than the 50-mile effect. This suggests the effects of competition phase out over medium distances. For every competing casino between 3 and 50 miles away, an existing casino would lose $15M annually, compared to $4M for a casino between 50 and 100 miles away.

[19] The analysis is broken up into two sections. For the complete panel set, I used an abbreviated set of variables. Casino City's North American Gaming Almanac's first year was 2002. That source includes an extensive list of characteristics (number of slot machines, employees, casino size, etc.) by gambling establishment by year. I cried when I saw it. To gather data on casinos' location and attributes before 2002, I used Steve Bourie's American Casino Guide, which contained information on hotels, restaurants, and the presence of table games. This source was used to supplement the Gaming Almanac from 1995 to 2001.

Table 4.2 OLS Regression for Annual Casino AGR (1995-2009)

Dependent: Annual Adjusted Gross Revenue *(2005 dollars, Millions)*	Coefficient	Std. Error		P-Value
Casino_within3	14.738	(2.424)	***	0.000
Casino_3to50	-15.423	(3.496)	***	0.000
Casino_50to100	-4.040	(2.206)	*	0.067
Dist_DisAdv (miles)	-0.303	(0.077)	***	0.000
Closest_CasinoDist (miles)	-0.187	(0.100)	*	0.060
Num_of_Restaurants	3.653	(0.587)	***	0.000
Hotel (yes/no)	26.128	(5.517)	***	0.000
HorseTrack (yes/no)	24.587	(23.79)		0.301
Dog Track (yes/no)	-35.945	(41.94)		0.391
Table_Games (yes/no)	8.958	(8.366)		0.284
TribalCasino (yes/no)	53.101	(24.19)	**	0.028
UnemploymentRate	-6.779	(1.117)	***	0.000
Population_within50 (millions)	28.937	(4.269)	***	0.000
Yearly_trend	8.375	(0.856)	***	0.000
Yearly_trend_sq	-0.326	(0.036)	***	0.000
FirstYear	-66.541	(10.18)	***	0.000
Constant	115.033	(20.76)	***	0.000

Number of Observations: 1139	*R-squared within: .2658*
Number of Casinos: 103	*R-squared between: .6493*
Number of time periods: 15	*R-squared overall: .6121*

In addition to the distance to competitors, I calculated a Distance Disadvantage (*Dist_DisAdv).* This measurement compares Casino A's distance to its closest major metropolitan area, to the distance from that metropolitan area to its closest casino. For example, if Casino A was located 50 miles north of Los Angeles (its closest metro area), but the closest casino to Los Angeles was actually 20 miles south of the city, Casino A's *Dist_DisAdv* would be 30 miles (50 – 20), even though it is 70 miles away the other casino. It turns out that for every 100 miles of disadvantage, a casino loses over $30M in AGR. When translated into taxes, that amounts to $12M for a state that has a 40% tax rate on gaming revenue. As casinos move to urban locations, this distance disadvantage grows for the older generation of casinos. This puts existing casinos in a precarious position that new amenities are unlikely to overcome.

Even with a limited set of attributes, the casinos' characteristics significantly and positively affected their revenue generation. The number of restaurants and presence of a hotel were significant,

though the presence of table games was insignificant. Each of them positively affected casino AGR.[20] generally speaking, revenue is increasing for most of the casinos controlling for other factors, based on *Yearly_Trend* and *Yearly_TrendSquared*. Specifically this result suggests that for every year in existence a casino's revenue grows by $8.0M, but that the level of increase gradually declines over time (e.g. revenue grows by $7.4M in the second year, $6.7M in the third year, etc.). This is consistent with the regression on the shorter time period and earlier studies that suggest a leveling off of casino revenue (Walker and Jackson 2007). I included *UnemploymentRate* to control for the national economic condition; as expected high unemployment translates into lower AGR. Including the unemployment rate helps control for the economic downturn that coincided with added competition in the latter half of the decade. We can see the effects of casino competition on revenue even accounting for bad economic conditions. The other variables are included to account for noticeable categorical differences among casinos. Proximity to a population center matters. An extra one million people living within 50 miles of the casino, was associated with $29M more in revenue.

Table 4.3 OLS Regression for Annual Casino AGR (2002-2009)

Dependent: Annual Adjusted Gross Revenue *(2005 dollars, Millions)*	**Coefficient**	**Std. Error**		**P-Value**
TotalSlots_within3	0.004	*(0.001)*	***	0.000
TotalSlots_3to50	-0.004	*(0.002)*	**	0.044
TotalSlots_50to100	-0.002	*(0.001)*	***	0.004
TableGames_within50	-0.210	*(0.091)*	**	0.020
Dist_DisAdv (miles)	-0.395	*(0.075)*	***	0.000
Num_of_SlotMachines	0.014	*(0.003)*	***	0.000
Num_of_TableGames	0.499	*(0.082)*	***	0.000
Num_of_HotelRooms	0.032	*(0.01)*	***	0.002
Num_of_Restaurants	0.771	*(0.598)*		0.197
Num_of_EntertainmentVenues	-2.813	*(1.677)*	*	0.093
Convention_Sqft	-0.0003	*(0)*	***	0.009
TribalCasino (yes/no)	-16.256	*(17.29)*		0.347
Racino (yes/no)	24.176	*(15.19)*		0.112
SmokingBan (yes/no)	-26.237	*(7.096)*	***	0.000
AdmissionTax (yes/no)	-17.744	*(8.11)*	**	0.029
HighestTaxRate	-35.049	*(18.54)*	*	0.059
UnemploymentRate	-3.512	*(0.857)*	***	0.000
Population_within50 (millions)	26.930	*(3.402)*	***	0.000
Yearly_trend	6.366	*(1.307)*	***	0.000
Yearly_trend_sq	-0.366	*(0.054)*	***	0.000
FirstYear	-80.821	*(9.779)*	***	0.000
Constant	126.401	*(16.52)*	***	0.000
Number of Observations: 643		*R-squared within: .4308*		
Number of Casinos: 101		*R-squared between: .7465*		
Number of time periods: 8		*R-squared overall: .7316*		

Table 4.3 shows the results of the second regression, this time using more in-depth information on the same number of casinos, but with fewer years. Instead of

[20] It should be noted that they likely have a positive effect on profitability absent their effect on gaming revenue.

assessing *whether* having table games matters, this information enables me to discuss the effect of the amount of table games. The total amount of slot machines within 3 miles, between 3 and 50 miles, and between 50 and 100 miles, all figured into the model significantly. In the longer data set, the number of casinos within 3 miles increased AGR, while in the 50-mile and 100-mile zones, the effect of additional casinos was negative. Here the rationale is exactly the same. The presence of many slots machines in very close proximity complements other casinos and increases the AGR.

The amount of table games within 50 miles has a negative effect on revenue, with each additional competing table game associated with a yearly loss of $210K to an existing casino. An additional 100 slot machines within 50 miles (but outside of 3 miles), would likely result in losses of $400K. These results take into account the fact that casinos are changing and improving as other casinos open and expand. The controls for the basic casino characteristics (slot machines, table games, and hotel rooms) are all significant, positive, and greater in magnitude than the same information for competitors. That suggests that although casinos are affected by their competition, their own traits ultimately wield more influence than other casinos' characteristics.

Surprisingly, the number of entertainment venues, restaurants, and the amount of convention center space are either insignificant or in the wrong direction, even though all three are positively correlated with casino revenue. One possible explanation for the lack of significance for these variables is that their effects may not be reflected in gaming revenue, even though they positively impacts profit. Alternatively, the return to these facilities may be too small for the model to detect.

Everything isn't all about the competition. State legislation plays a role in casino performance as well. I included two regulatory dummy variables in this regression: one for the smoking ban in effect in Illinois and Colorado, and one for states that had an admissions tax in addition to their gaming tax. Both are negatively associated with AGR, with the smoking ban causing an average decline in annual revenue of about $26M. The legislation was not intended explicitly for casinos; rather casinos fell into the list of applicable sites where the ban was enforced. Studies have concluded that these regulations have benefited casinos in neighboring states that do not have them (Garrett and Pakko 2009).

Finally the Distance Disadvantage was more pronounced when specific casino traits were considered, while the *UnemploymentRate* had a more modest effect. Recall from the longer series, 100 miles of disadvantage translated into $30M of lost annual revenue. This estimation suggests $40M of lost revenue for the same distance. The reduced effect of the unemployment rate, when we control for the attributes of casinos, suggests that some casinos are more resilient to market downturns based on

their amenities or their proximity to large populations. The Distance Disadvantage may be more pronounced in a period when money is tight and travel budgets are slim. Tourism promotion has been a stated goal of casinos for some time, but this evidence suggests a large part of the performance is driven by local factors. Nearby casinos, nearby cities, short driving distances, and convenient policies all contribute a great deal to the performance of casinos.

Effect on Casino AGR and Tax Revenue

Casinos' competition in areas of intermediate proximity to each other has eaten away at revenue (and by consequence state tax revenue). For at least this set of casinos, revenue performance is substantially driven by local (or regional) characteristics and is negatively affected by other casinos. These results suggest that casinos (and by extension their host communities) will be affected by competition. The results support previous findings that casinos' growth rates and effects die out over time and confirm the relationship between distance to large populations and the profitability of casinos. Since much of casino competition depends on relative distance, a new wave of urban casinos will put rural and suburban casinos at greater disadvantages.

Chapter 5: Casino Competition Effects Local Economies

From a policy perspective the primary reason to be concerned with the performance of casinos is not for their sake, but for their relationship with the wellbeing of communities. In many cases, cities begrudgingly let casinos into the area, charge millions in licensing fees, and then set very high gambling tax rates. Still, casinos line up for licenses, while politicians debate expansion and further legalization. If they are as successful as their increased expansion suggests, we should be able to identify their effects on places. This section links the economic development impacts they are expected to have to the analysis from Chapter 4 about how casinos affect each other.

Quantitative Model for County Economic Indicators

The first step in the analysis estimates the probability that a county in a given year (either in 1997, 2002, or 2007) actually has a casino. This is done to account for the selection bias between groups of counties: those that have casinos and those that do not. Counties that eventually host casinos exhibit a number of characteristics that make them ripe candidates for hosting a casino. States, through the licensing process, have discretion over where casinos locate. For example, depressed areas struggling with unemployment and shrinking budgets may like the idea of having a major employer and taxpayer move into the region (Pierce and Miller 2004). The severity of conditions that led to a county getting a casino subsequently may affect its economic response to the casino. Therefore this analysis includes two parts: one model that predicts whether the county has a casino, and one model that estimates new casinos' effects on a county's income, unemployment rate, and total job growth.

The output from the first model is a probability that is used in the second model. This probability is based on the state regulations, proximity to other states, and demographics of the county, and alleviates some of the selection bias associated with casino-related county economic performance. Appendix II describes the characteristics used to predict the presence of a casino in a county.

There are two ways to think about identifying the effects of casinos on county economic impacts. This discussion will eventually include all of the indicators, but for the moment let's talk in terms of income. One method of identifying effects compares the average income in the county before the casino existed, to the average income after the casino has been in operation. This method makes sense; if the casino has a positive effect, we should see it over time. A second method compares counties with casinos to counties without casinos at one moment in time. If casinos have positive effects on income, counties with casinos should have higher average income than counties without them, all

Table 5.1 Variable Definitions and Expected Effects on Economic Indicators

Variable	Description	Source	Effect on Unempl. Rate	Effect on Total Jobs	Effect on Income
Casino Information					
CasinoCounty	Equlas 1 if the county had a casino at the beginning of the period; Equals 0 otherwise	Casino City	-	+	+
BorderCounty	Equlas 1 if the county bordered a county that had a casino at the beginning of the period; Equals 0 otherwise	Casino City	-	+	+
BecameCasinoCounty	Equals 1 if the county was not a CasinoCounty at the beginning of the period, but was a CasinoCounty at the end of the period; Equals 0 otherwise	Casino City	-	+	+
BecameBorderCounty	Equals 1 if the county was not a BorderCounty at the beginning of the period, but was a BorderCounty at the end of the period; Equals 0 otherwise	Casino City	-	+	+
BecameCompetingCounty	Equals 1 if no casino existed within 50 miles of county borders in period1; Equals 0 otherwise	Casino City	-	+	+
Num_of_NewCasinos	Change in the number of casinos in the county over the period	Casino City	-	+	+
Num_of_NewCasinos_50	Change in the number of casinos within 50 miles of the county border over the period	Casino City	+	-	-
Industrial Composition					
Constr%	Pct. of employment in Construction	BEA			
Fin_RealEstate.%	Pct. of employment in finance, insurance and real estate	BEA	-	+	+
Government%	Pct. of employment in government & public administration	BEA	-	+	+
Manufact%	Pct. of employment in manufacturing	BEA	+	-	+
Retail%	Pct. of employment in retail trade	BEA	-	+	-
Proprietor%	Pct. of employment in proprietorship	BEA	+	-	-
Demographic					
Dist_to_MajorMetro	Distance to metropolitan area of at least 1 million inhabitants	ArcGIS	-	+	+
CollGrad%	Pct. of population with a college degree	Census	-	+	+
HSGrad%	Pct. of population with a high school diploma	Census	-	+	+
PctPopChange_90s	Pct. change of population during the 1990s	BEA		+	+
State Border	Equals 1 if the county borders another state; Equals 0 otherwise	ArcGIS		+	
National Trends					
Period2	Equals 1 if the period covered is 2002-2007; Equals 0 if the period covered is 1997-2002		+	-	-
MILLSRATIO	Inverse Mills Ration, selection bias correction for counties likelihood of having a casino				

Sources: Casino City's North American Gaming Almanac, Bureau of Economic Analysis (BEA), United States Census, Bureau of Labor Statistics

else being equal. However, all else is not equal. Places have varying initial conditions including education, industry composition, initial income levels, population growth rates, and geography that influence the income level of a region.

Let us say we have identified two counties that have similar initial conditions and neither has a casino. One county gets a casino, while the other does not have one. After five years, the county that obtained a casino and has higher income than the other. If the counties maintained their other similarities over this period, the difference in income levels after five years may be attributable to the "treatment" that one of the counties received. Stated plainly, the increase in income is due to the presence of the casino.

This research uses a similar structure to assess the impacts of additional casinos on counties that already have them. Specifically, the change in income (from1997-2002 and 2002-2007) for counties with casinos that saw no new casinos in neighboring counties will be compared to the change in income for counties with casinos which neighbored areas that added casinos. This difference is the change in per capita income that I attribute to the addition of casino competition of nearby counties.

Table 5.1 outlines the variables, their source, and predicted relationship with the dependent variables, but it is worth discussing the meaning of each of the casino variables for clarity. *CasinoCounty* is dummy variable indicating a county had a casino at the beginning of the period. It is the effect of having a casino in the county. *BorderCounty* is a dummy variable signifying the county bordered at least one county with a casino at the beginning of the period and represents the effect of bordering a county with a casino. *BecameCasinoCounty* refers to counties that were not casino counties at the beginning of the period, but were casino counties by the end of the five year period. This is interpreted as the effect of obtaining a casino. Similarly, *BecameBorderCounty* indicates the county was not a border county, but became a border county over the five years. *BecameBorderCounty* measures the effects casinos have on nearby regions. *BecameCompetingCounty* identifies all counties that were both casino counties and border counties at the end of the period, but were not at the beginning of the period. This is interpreted as the effect of competing casinos, as separate from the effect of just having them or being near them. *Num_of_NewCasinos* and *Num_of_NewCasinos_within50* represent the number of new casino openings over the five year period within the county and within 50 miles of the counties borders, respectively. These last two variables control for possible growth within the casino industry in a given place that would not be captured by the dummy variables if the county's category did not change.

BecameCompetingCounty equals 1 if the county did not begin the period as a competing county but ended the period as a competing county. A county will be in this category in one of three ways. First, it can start as a border county and become a casino county. To calculate the casino and competition effects for this county we sum the coefficients for *BorderCounty*, *BecameCasinoCounty*, and

BecameCompetingCounty. Second, if a new casino opens in the county next door to an existing casino county, one calculates the effects by summing *CasinoCounty*, *BecameBorderCounty*, and *BecameCompetingCounty*. Third, a county could become both a border county and casino county during the same period. In this case the calculation includes *BecameBorderCounty, BecameCasinoCounty,* and *BecameCompetingCounty.* I give the range of outcomes when I describe the results of casino competition on the indicators.

Casinos are not the only economic development engines at work however. Unemployment, total jobs, and income obviously depend on more than just the presence of a casino. Accordingly, I include several factors that affect the amount of change in the economic indicators, related to industrial composition, demographics, and national trends. Including industrial composition (prior to the treatment period) in the regression allows for the possibility that counties with a certain composition tended to have greater changes in the economic indicator over the course of the experiment regardless of whether they are in the treatment or control groups (Stock and Watson 2003). Education characteristics prior to the treatment period were included because they are important determinants of productivity and growth (Glaeser and Gottlieb 2009). Lastly, economic downturns especially affect tourism-related industries because much of the spending presumably comes from disposable income. Hopefully, these controls separate the effects of the casinos from the intrinsic characteristics of the places.

Data Sources

The Bureau of Economic Analysis (BEA) provided the annual county level indicators used in the county portion of the analysis, as well as population estimates. Where the analysis required estimation of population within "x" miles, ArcGIS mapping software was used to make the calculation based on census data. The North American Gaming Almanac and ArcGIS were used to identify "casino counties" by geocoded location of casinos. The quantitative models employ OLS regression analysis and use the difference-in-difference estimator to discern the effect of additional casinos to two different groups: competing and non-competing casino counties. All statistical analysis was performed using STATA.

Competition Effects on County Economic Conditions

This analysis uses the same data from Chapter 3 and expands on the descriptive analysis presented there. The unit of analysis in the county and the economic development impacts are measured by **Change in the Unemployment Rate, Percent Change in Total Job Growth, Change in Per**

Capita Income ($Thousands). All changes took place over one of two five year periods: 1997 – 2002 and 2002 - 2007. Table 5.2 shows the results for all three regressions. Also, general economic trends for the second half of the study period were better than the first. The *Period2* dummy variable is significant and positively associated with the favorable outcomes (high income, high job growth, low unemployment). The Inverse Mills Ratio controls for the selection bias that occurs as a result of some counties being more likely to be in the set of *CasinoCounties* than others.[21] The overall message is that casinos have positive effects on economic outcomes at the county level, but as they compete, a non-trivial amount of the benefit is lost.

Casino Competition Effect on Total Employment

According to these results the effect on total employment growth of having a casino is positive in the home county, but negative in nearby counties. Neither result is significant, their magnitudes are small, and the effects largely cancel each other out. On the other hand, the effect of obtaining a casino is positive and significant. Counties that obtained casinos saw total employment increase by 3.3%. The effect on bordering counties was positive but not significant. Finally, the effect of becoming a competing county was associated with a 2.2% drop in total employment (though this result is only significant 90% confidence level). According to these results, if the county begins as a *CasinoCounty* and become a *BorderCounty*, the cumulative effect is -1.6%. In the best case scenario where the county becomes both a *CasinoCounty* and *BorderCounty* during the same period, the cumulative effect is 1.4% increase in total employment.

The initial conditions (demographics and industrial composition) of the places matter, but the general hypothesis is supported by this evidence. All of the industrial sectors were significant for this indicator in expected directions. Having a relatively high dependency on manufacturing was associated with negative job growth. Construction and retail are associated with high growth, while the magnitude of government employment's effect on job growth was small compared to these sectors. Employment was positively and significantly associated with strong population growth (*PctPopChange_90s*) during the previous decade as well as highly educated populations (*CollGrad%*). Additional casinos in and around the county did not have a noticeable effect.

[21] The results and explanation of Stage 1 of the model are reported in Appendix II.

Table 5.2 OLS Regressions for County Economic Indicators

	Coefficient	Std. Error		P-Value	Coefficient	Std. Error		P-Value	Coefficient	Std. Error		P-Value
	%Change Total Employment				%Change Unemployment Rate				%Change Per Capita Income			
Casino Variables												
CasinoCounty	0.2492	*(0.521)*		0.6320	-0.1042	*(0.095)*		0.4430	0.2325	*(0.121)*	*	0.0550
BorderCounty	-0.1781	*(0.293)*		0.5430	-0.2305	*(0.055)*	***	0.0010	0.2361	*(0.070)*	***	0.0010
BecameCasinoCounty	3.2814	*(1.094)*	***	0.0030	-0.3447	*(0.205)*		0.1860	0.7018	*(0.262)*	***	0.0070
BecameBorderCounty	0.3347	*(0.485)*		0.4900	-0.3478	*(0.090)*	***	0.0010	0.6083	*(0.115)*	***	0.0000
BecameCompetingCounty	-2.2114	*(1.294)*	*	0.0880	0.6102	*(0.241)*	***	0.0070	-0.5079	*(0.307)*	*	0.0980
Num_of_NewCasinos	0.1611	*(0.096)*	*	0.0940	-0.0250	*(0.018)*		0.1650	0.0147	*(0.023)*		0.5150
Num_of_NewCasinos_50	0.0204	*(0.036)*		0.5650	0.0211	*(0.007)*	***	0.0030	0.0129	*(0.008)*		0.1280
Industry Variables												
Empl_Constr%	55.2994	*(5.722)*	***	0.0000	-1.0095	*(0.998)*	***	0.0060	9.3274	*(1.385)*	***	0.0000
Empl_Fin_RealEstate%					-0.7123	*(1.409)*		0.7680	11.7485	*(1.957)*	***	0.0000
Empl_Government%	4.0443	*(2.09)*	*	0.0530	-0.8991	*(0.402)*		0.1860	0.5770	*(0.522)*		0.2690
Empl_Manufact%	-14.7688	*(1.763)*	***	0.0000	3.1412	*(0.310)*	***	0.0000	-1.4870	*(0.402)*	***	0.0000
Empl_Retail%	22.2930	*(3.976)*	***	0.0000	-2.0345	*(0.716)*	**	0.0320	-0.6568	*(0.906)*		0.4690
Empl_Proprietor%	5.2359	*(1.503)*	***	0.0000								
Geographic/Demographic Variables												
Dist_to_MajorMetro	0.0004	*(0.002)*		0.8260	-0.0027	*(0.0004)*	**	0.0350	0.0019	*(0.0048)*	***	0.0000
CollGrad%	0.1335	*(0.019)*	***	0.0000					0.0856	*(0.005)*	***	0.0000
HSGrad%					0.0591	*(0.003)*	***	0.0000				
PctPopChange_90s	29.1103	*(0.976)*	***	0.0000					-1.6249	*(0.273)*	***	0.0000
StateBorder									0.1149	*(0.083)*		0.1650
Selection Variables												
Period2	2.0776	*(0.314)*	***	0.0000	-1.6603	*(0.062)*	***	0.0000	0.2306	*(0.074)*	***	0.0020
MILLSRATIO	-0.7212	*(0.232)*	***	0.0020	0.1240	*(0.039)*	***	0.0000	-0.0407	*(0.081)*		0.6150
Constant	-3.3479	*(1.853)*	*	0.0710	-4.1134	*(0.335)*	***	0.0000	-0.4885	*(0.510)*		0.3380
	Number of observations:			5500	Number of observations:			5149	Number of observations:			5149
	Adj R-squared:			0.3805	Adj R-squared:			0.2269	Adj R-squared:			0.1903
	F(17, 5482) =			199.64	F(16, 5132) =			95.45	F(18, 5130) =			68.22

Casino Competition Effect on Unemployment

It is worth noting some conceptual differences between unemployment decline and job growth. Jobs are tied to places. If a new store opens in a city with 100 new positions, the city has 100 more jobs. If fifty of the jobs are filled by people from surrounding areas, the unemployment rate of the city is only decreased by the 50 people that now have jobs (assuming they were unemployed before). Cities do try to encourage casinos to hire locally, but it is certainly likely that a percentage of the jobs go to people outside of the jurisdiction, and possibly outside of the region.

The results for the change in the *UnemploymentRate* are similar to those for job growth, in the sense that being a *CompetingCounty* did not yield a positive outcome. Both being and becoming a *BorderCounty* was associated with a statistically significant decline in unemployment. For casino counties the effect of obtaining a casino was stronger than the effect of just having a casino, but both were insignificant. These results support the view that casinos benefit outsiders more than (or at the expense of) their host communities. The presence of a casino was associated with better outcomes for the *BorderCounties* than for the *CasinoCounties,* regardless of whether a new casino was added or already existed in the region. Again the best case scenario, when casino competition is present, involves becoming both a BorderCounty and a CasinoCounty. In this case net change in unemployment rate is a decrease of .08%, which is still an improvement. In the worst case, an existing CasinoCounty becomes a BorderCounty and experiences .16% increase in the unemployment rate. Casino competition at the county level cancels out all of the unemployment improvement associated with having casinos. Additionally, the number of casinos opened within 50 miles of the county is significant. Increasing the number of casinos within 50 miles of the county results in higher unemployment for the host county.

For control purposes, all of the industrial sectors were included, again without any surprises. However, both of the demographic variables included were in the wrong direction from the expected outcome. Unemployment rates do not change as drastically as job and income growth, and so the magnitudes of the coefficients are expected to be smaller for this model.

Casino Competition Effect on Per Capita Income

The presence of a casino in a county or neighboring county has a positive effect of the change in per capita income. If a county or its neighbor obtains a casino, the county should see a positive, though modest, increase in per capita income. If a county and its neighbor obtain a casino over the period, the net effect on per capita income is an increase of $802. If a *CasinoCounty* becomes a *BorderCounty*, the

cumulative effect is an increase of $333. Competing Counties however are associated with negative changes in per capita income of -$508. This is the only indicator for which the effects of the competition are less than the effects of obtaining the casino. Even though the competition effect negates much of the income gains from obtaining a casino, per capita income is still higher if the county next door obtains a casino. In other words additional casinos actually increase per capita income irrespective of competition.

As for other variables, areas that experienced high population growth during the 1990s had low per capita income growth. This could either reflect a high population of children, or an abundant labor supply driving wages down. The education indicator is in the expected direction and significantly related to income growth over the period.

Testing for Causality

Either casinos are having desired economic effects by increasing total jobs and income, or they are locating in places that were already growing, in which case it should not be surprising that economic growth and additional casinos are positively correlated. To test for this, I performed another probit analysis that looked at the probability that a county would add a casino in Period 1 conditional on the county's economic growth in Period 0. For example, I measured the change in a county's total employment from 1992 to 1997 and compared that to whether the county became a casino county between 1997 and 2002. If the counties that experienced a large percentage growth in total employment were more likely to become casino counties than counties that experienced a small percentage growth, then there is evidence that casinos locate in places that are experiencing job growth. This suggests the casino is not causing growth. Rather it chose to operate in a growing area.

The results of the causality analysis (Table 5.3) show that growth in per capita income and total job growth were negatively related to the probability that a county would obtain a casino, if any relationship existed at all. In other words, areas that had high growth were less likely to become casino counties than areas with low growth. This supports the notion that states use casinos to revitalize struggling areas (Pierce and Miller 2004). These results were not statistically significant, but they do not need to be. A positive relationship would have indicated a selection bias. We do not have enough evidence to reject the null hypothesis that casino openings are independent of recent economic trends in the county.

On the third measure, unemployment, we do find a significant and negative relationship with counties obtaining a casino. Counties that saw declining unemployment (which is good) were more likely to get casinos. In one sense, this result casts doubt on casinos' effects on unemployment since there is

Table 5.3 Probit Regression Results for Casino Location Choice

Probit Regression	Coefficient	Std. Error		P-Value	Coefficient	Std. Error		P-Value
Dependent Variable: *BecameCasinoCounty*								
Economic Indicators								
Chng_Income_t-1	-0.0322	(.0241)		0.1820	-0.0545	(.0303)	*	0.0720
Chng_Jobgrowth_t-1	-0.1299	(.3110)		0.6760	-0.2781	(.4929)		0.5730
Chng_Unempl_t-1	-5.5042	(1.725)	***	0.0010	-7.0629	(2.315)	***	0.0020
Other Gambling Variables								
BorderCounty	0.3228	(.0840)	***	0.0000	0.2826	(.0921)	***	0.0020
StateLottery	-0.0760	(.1366)		0.5780	-0.0581	(.1561)		0.7100
Demographic/Geographic Variables								
CollGrad%	0.0227	(.0053)	***	0.0000	0.0237	(.0061)	***	0.0000
Dist_to_MajorMetro	-0.0014	(.0006)	**	0.0270	-0.0072	(.0007)		0.2980
StateBorder	0.0687	(.0811)		0.3970	0.0938	(.0886)		0.2900
TribalArea	6.5898	(.6187)	***	0.0000	7.0130	(.6770)	***	0.0000
Industry Variables								
Chng_Constr_t-1					0.3889	(4.041)		0.9230
Chng_Fin_RealEst_t-1					-4.0087	(5.208)		0.4410
Chng_Government_t-1					0.6193	(2.639)		0.8140
Chng_Manuf_t-1					-0.5930	(1.682)		0.7240
Chng_Retail_t-1					-4.5487	(1.526)	***	0.0030
Constant	-2.5455	(.1673)	***	0.0000	-2.6772	(.2006)	***	0.0000
	Number of observations:			6148	Number of observations:			4971
	Chi Squared:			143.04	Chi Squared:			142.90
	Model P-value:			0.0000	Model P-value:			0.0000

evidence that casinos choose places with preferable (declining) unemployment trends. However, obtaining and having a casino was not associated with a statistically significant decline in unemployment in the previous model. Taken together, casinos likely have their desired effect on jobs and income (independent of previous trends), while it is unclear if they have a preferred effect (if any effect at all) on the unemployment rate in a county. In all cases, casino competition had a negative effect on the desired economic development outcomes, regardless of whether or not those outcomes were positive.

Effect on Economic Development Impacts

Casinos initially have their intended effects of increasing total jobs and adding tax revenue to the state coffers. Using broad economic indicators for analysis (and these indicators may not be the

correct indicators to study), counties with casinos outperformed their counterparts. However, casino competition diminished the positive effects seen by host counties. For casino counties that experienced new casinos opening in bordering counties the economic development gains associated with total employment growth and unemployment were completely negated. For counties that became casino and border counties during the same period, the economic development outcomes were positive. However there is concern for the future since the effects of having a casino are much lower compared to the effects of getting a casino. Border counties that became casino counties received benefits but it appears it came at the expense of their neighbors. The results resemble payoffs of the prisoners' dilemma. It is in the interest of both a county and its neighbor to get a casino regardless of what the other does. If both get casinos, the payoffs decline to a marginal and in some cases negative level.

Chapter 6: Findings and Conclusions

Imagine a scenario in a small city with a several strip malls and main streets throughout the city. As a part of the city's efforts to revitalize part of the city that is underserved by commercial business and in need of investment, the city council decides to encourage development along a corridor within the underinvested area. A market analysis determines the project to be feasible given the right mix of tenants, design, and uses. After a couple of years, business at the new development seems to be booming, but a few of the other strip malls around the city are struggling. It could be that the older strips are struggling because of poor management or disinvestment, or it is possible that some of the customers of the former strip malls have begun shopping at the swankier, newer development. If the second case is true (where customers migrated), has any economic development occurred or has economic fortune been shifted from one area of the city to the other? I use this framework to analyze casino gambling.

The subject of this thesis is casino gambling, but the question it sought to answer was concerned with economic development strategy when neighboring areas compete. Specifically, casinos have been strategically placed in areas throughout the country to accomplish a number of goals. Higher tax revenue without higher taxes rates, more jobs, more tourists, more investment, and revitalization of declining areas are all among them. The goals would be perfectly defensible if not for the fact that gambling has negative side effects. The stigma associated with gambling has limited its presence to certain regions and subsequently provided regional monopolies for some casinos in an era with growing acceptance of gaming as a pastime. Study after study quoted the need for casinos to attract tourists in order to achieve maximum economic benefit, but as the number of gambling locations increases gamblers travel shorter distances and the number of tourists at casinos declines in favor of local clientele.

Qualitative Impacts

The trends from chapter 3 show a steady march of gambling across the country, including rural Native American reservations and downtowns of major cities. The initial focus for many areas was a revival of tourism. For some regions, this is still the focus as casinos increasingly have hotels and attractions to encourage out-of-town guests to stay longer and spend more. In addition to the attraction of more tourists, casinos try to extract as much value from the customers as possible. So while the

gambling has grown (total slot machines, table games, and number of casinos), so have the non-gambling activities (restaurants and entertainment venues).

The casinos are bigger. They have more restaurants and the restaurants serve different types of food at different price levels. The machines are enhanced: at newer casinos, they have cup-holders and television screens built-in to the machine, just in case the patron was inclined to get up. The shows and activities entertain the people who don't like to gamble, but visit the casino with people who do gamble. Competition has not just led to lower profits; it has led to a different type of casino that more frequently is located in a different kind of place than original casinos.

States have internal tension with regards to gambling. In one sense additional tax revenue without higher tax rates on residents is wonderful and most places will not turn away additional jobs if they can get them. However, states and localities do fear the negative impacts of casinos on their communities and, if we consider casinos a tax-raising scheme, states would prefer to tax outsiders rather than their own residents. The tax revenue argument is beating the negative externality argument, as the nation's acceptance of gambling increases. With tax revenue and jobs for the unemployed driving the debate, casinos will continue to locate in cities. This leads to indirect economic development impacts because, since the casinos are in cities, abutters and communities are now in play. Community development agreements, local hiring agreements, economic development funds, and funds for special projects are increasingly sought after given the initial conditions of casinos' host communities.

When I began this research, I expected to find a percentage decline in some measure of economic performance due to casino competition. I did. But I also found that competition spurred secondary economic development impacts related to new casino markets.

Quantitative Impacts

The analysis showed that initial benefits to casinos were large, but that the benefits associated with them diminished over time as the market matured or as competition intensified. I found that the returns to getting a casino were positive and significant in terms of income growth and employment. In the case of unemployment reduction, neighbors to counties that had a casino fared better than the counties with the casinos. However, after a county had a casino for a while, the positive changes of getting the casino leveled off resulting in muted benefits of having a casino. Trends in casino revenue showed the same pattern, with steep growth initially and then relatively stable revenue unless outside forces affected it.

Casino competition reduced the economic development impacts of casinos at the county level, even though the overall net effect for each of the indicators tended to be positive. In every case the effect of casino competition among counties negated part or all of the benefit from being near casinos, having casinos, or obtaining casinos. For counties that have casinos, if a county that borders them obtains a casino, the new casino will result in 1.6% drop in total employment, .16% increase in their unemployment rate, and $300 increase in per capita income. In two cases all of the economic development impact is wiped out by additional casinos, while in the third the casino enhances the county's position.

Regardless of casino type or size, the proximity of other casinos affects the revenue of existing casinos. A casino's revenue performance is driven by its own characteristics, like the presence of multiple gambling options (table games and slots), hotels, and restaurants. These were all associated with higher revenues. The presence of other casinos within very close proximity (within 3 miles) had a complementary effect and boosted the revenue of an existing casino. Once outside of the 3 mile radius however, each new casino detracted from existing casinos' revenue. For every competing casino between 3 and 50 miles away, an existing casino would lose $16M annually compared to $4M for a casino between 50 and 100 miles away.

Another finding emphasizes the role of convenience in this economic development strategy. With so many gambling locations, casinos are increasingly serving local clientele and so having a large population within comfortable driving distance (50 miles) is very significant. According to my findings, it is also advantageous to be the closest casino to a major metropolitan area. For every 10 miles a casino is at a disadvantage, $3M to $4M of revenue is lost. These two findings about competitive effects with respect to geography have negative implications for existing casinos in rural areas, which include many tribal casinos. As casinos locate in urban centers, the rural casinos are marginalized and the communities that depend on them face greater uncertainty.

Results in Context

In light of these results it is difficult to argue that casino gambling should continue to expand or that a city/state should forego jobs and tax revenue so that another neighboring jurisdiction can reap the benefits of casinos. National policy is not applicable since gambling is a state issue and collaboration between states seems unlikely. Yet, the net economic benefit when competitive effects are included is still positive, which suggests that new casinos are not just displacing the economic impacts from existing

casinos, even though the existing casinos are harmed. So while states, cities, and casinos compete to determine the winners and losers in the gambling industry, it appears that in many cases, places are breaking even (or a little better) in terms of economic development impacts.

Appendix I: Case Studies

While the effects of new additional casinos in regions are addressed quantitatively in this thesis, this appendix introduces case studies that put some of the results in context. The goals and reasons behind allowing and encouraging casinos vary across regions. Similarly, regional strategy changes depending on the events in other areas. The analysis of the rhetoric, studies, interviews and developments are not meant to be conclusive; rather, this section is meant to illustrate what actually happens on the ground.

The three cases, western Indiana & Eastern Illinois (CASE 1), Southwest Pennsylvania & northern West Virginia (CASE 2), and Massachusetts & Connecticut (CASE 3), were chosen because each represents interstate competition at a different stage of development. The first case is an example of interstate competition in its mature stage. The second reviews actions taken by neighboring regions, where one state had gambling for a period time and was joined by a second state. The third case describes the success factors of the first state along with the initial goals of the second state.

The relationship between casino regulation and competition is dynamic, so this section describes the actions that states, casinos, and localities take to improve their position. Reactions include everything from gambling expansion to higher tax rates. The first section establishes timelines and the geographic context of all of the casinos. This second part describes the regulation changes made in response to competition, while section three illustrates differences in casino quality. Section four reviews states' dependency on gambling and identifies conditions that make regions vulnerable. Indirect local effects of competition are discussed in the fifth section. Lastly, changes in the horseracing industry are discussed in the context of casino funding. Ultimately the cases should illustrate the aspects of two questions:

1. What does competition look like, locally and regionally?
2. What have been or may be the effects of this competition on places?

Background and Initial Casino Development

Illinois's first casino dates back to 1991; Indiana got its first casino in 1995. Both initially chose the riverboat gambling model and currently face competition from other neighboring states, including tribal casinos in Michigan and Wisconsin. The number of casinos in the Chicagoland area has not changed (5 in Indiana, 4 in Illinois), though two racinos opened in central Indiana in 2007 and Illinois has

considered a Chicago-area casino for at least a decade (Indiana-Interviewee1 2010). All of the casinos are within a 90-minute drive of downtown Chicago.

West Virginia has had its same stable of racinos since 1998. The two in the northern panhandle (Mountaineer in Chester, WV and Wheeling Island in Wheeling, WV) depend substantially on gamblers from outside of the state and are the subject of this case. In southwestern PA, there have been two recent additions. Meadows Racetrack and Casino opened in 2007 in Washington County; Rivers Casino opened in downtown Pittsburgh in 2009. All of the casinos are within a two-hour drive of Youngstown, OH; Wheeling, WV; and Pittsburgh, PA.

Connecticut's first tribal casino, the Mashantucket Pequot's Foxwoods Casino, opened in 1993. In 2010, it was the world's largest casino. The smaller, yet still gigantic, Mohegan Sun casino opened in October of 1996. Massachusetts has no casinos but recent proposals suggest possible locations at the sites of their racetracks which are in Plainville, Raynham, East Boston, and Revere. The major cities within driving distance are Boston, MA; Providence, RI; and New York, NY.

From the casino regressions, we saw that a distance disadvantage matters, but really a convenient (short, direct, safe, etc.) drive matters more. In Northern West Virginia, the road infrastructure makes the Chester casino more accessible to Ohioans, while Wheeling Island is more accessible to Pennsylvanians because of Interstate 70. After the two casinos opened in Pennsylvania, the Wheeling casino was significantly impacted, while Mountaineer has seen less drastic declines (West-Virginia-Interviewee2 2010). When Ohio casinos open, the interviewee expected that Mountaineer would be more severely impacted. In the Chicagoland case (CASE 1), the distance disadvantages are not as pronounced. The casinos in Illinois are in cities well outside of Chicago, so they are no more convenient than the Indiana casinos for much of the metro area. However, casinos in northwest Indiana are riverboats and not immediately accessible by interstate. A recent proposal would have allowed one of the Gary casinos to move inland next to Interstate 80/94 (Ruthhart 2010). Second generation casinos have the advantage of considering proximity to major highways when placing the casinos.

Gamesmanship and Relaxation of State Gaming Regulation

Interviews and reports suggest legislation at the state level is designed to exploit weaknesses in other states legislation. New casinos can offer promotional free play, in which customers receive offers in the mail to gamble a certain amount of money for free if the person comes to the casino by a certain

date[22]. West Virginia taxes this free play as AGR; Pennsylvania chose not to do so, probably in an effort to encourage its casinos to attract as many new customers to the new casinos as possible (West-Virginia-Interviewee1 2010). Similarly, when Illinois began open boarding[23] it had a brief advantage over Indiana casinos. Three years later, Indiana also eliminated its cruising requirement. With the exception of marginal tax rates, casino regulations like these have become more relaxed as casinos competition has increased. Across all the states, analysts and politicians are increasingly cognizant of the strategy and tactics being employed by other states.

Connecticut is an anomaly in this list of states because it did not choose to have casinos. Under the IGRA, states must negotiate with tribes in good faith when tribes wish to open casinos. The agreements can include regulatory payments (for added security, gambling addiction services, etc.), promises of exclusivity (moratorium on other forms of legalized gambling), and percentages of revenue (Connecticut casinos pay 25% of slot revenue to the state (State of Connecticut 2010)). If Massachusetts ever opens casinos, the regulatory game will likely be one sided because Connecticut cannot so easily change its agreements with the tribes.

Changes in Casino Characteristics

Instead of talking about gambling locations, the deliberations in the advanced competition case (CASE 1) are concerned with "what else?" There is a sense that the gambling industry is no longer growing, declining, or growing at a much slower pace. The focus is on amenities, hoping that the revenue will be maintained by encouraging investments in ancillary services like golf courses, spas, and convention centers that draw more tourists to the state. In contrast, CASE 2 developments are still concerned with adding gambling options and the quality of the gaming experience. The first Southwestern Pennsylvania casino opened in 2007; in late 2007 the northern West Virginia casinos added table games to maintain a competitive advantage (Rutherford 2007). In response to budget shortfalls, Pennsylvania approved table games at its casinos in 2009 (Barnes 2010). They are expected to open in mid 2010. If Massachusetts gets casinos, they will have quite a challenge matching the size and quality of the tribal casinos in Connecticut. In CASE 3 the competition may remain geographic only.

I visited the Mountaineer Casino in Chester, WV and the Rivers Casino in Pittsburgh. Slot machines in West Virginia were about what I had expected. There were rows of them with different

[22] Think of it as a gambling gift certificate.

[23] Under cruise requirements riverboats could only be boarded at certain times. Open boarding allowed riverboats to remain dockside and allowed gamblers to board at their leisure.

themes and different denominations. The slot machines at the Rivers Casino, were equipped with cup holders and miniature television screens. Both of these additions seemed to encourage longer periods of gambling and are probably considered more convenient for gamblers. There were other differences between the two properties, but I mention this one to illustrate the point that newer casinos often come with state-of-the-art facilities that further disadvantage older casinos. Obviously investment and reinvestment are part of business, but for rural convenience casinos, the level of investment needed to remain on equal footing would be substantial.

Gambling Dependency

There is a concern expressed in political debates about the increasing prominence of gambling dollars in fiscal budgets and the increasing presence of gambling in everyday lives (Ruthhart 2010). From 1997 to 2009, revenues from gaming accounted for 4 to 6% of Connecticut's general fund (Spectrum Gaming Group 2009). Foxwoods and Mohegan Sun are among Connecticut's top employers (Legere 2008) and accounted for roughly 15% of net job growth from 1992 to 2007 (Spectrum Gaming Group 2009). In 2008, approximately $583M of Indiana's $12.9B dollar budget came from gambling revenues (Indiana State Budget Agency 2009). In West Virginia, 9.2% of the state's general revenue came from gambling revenue in 2007 (Dadayan and Ward 2009); only Nevada's gambling proportion was higher. These examples illustrate the degree of dependency on gambling particularly for the states without the major metropolitan areas.

The number of casinos a state has typically does not increase very much once the original licenses have been claimed.[24] On the politics side there tends to be a statewide resistance to expand, even though some local politicians may be in favor of more gaming for their districts. Economically, the regression analysis showed that revenue is probably maximized in close proximity to population centers. As the regulations stand however, licenses are tied to places and not likely to move. While Indiana is more fiscally dependent on gambling (particularly from Chicago residents), Indiana's gambling industry is not as threatened because the regulations in Illinois discourage investment in casino properties (Illinois-Interviewee1 2010). Casinos in northern West Virginia unfortunately are at a regulatory and distance disadvantage compared to their counterparts in Pennsylvania.

[24] Indiana is the exception, and they have only added two racinos in twelve years since the original casinos opened.

Casino Competition Effects Local Impacts

At the beginning of this exercise I was concerned with spillover businesses and how they would be affected if competition resulted in a decline in traffic to the locality. However, none of the interviews identified spillover effects from casino traffic except for gas stations.[25] As previously stated, the casino offers food, lodging, and entertainment inside. Most of the investment near casino properties tends to be done by the casinos. Other businesses are at a disadvantage compared to the casinos when it comes to selling complementary services. One official cites the "ability of the casinos to comp" patrons with free rooms, meals, etc. as the determining factor of what deters outside investment in these areas (Indiana-Interviewee1 2010). In downtown Pittsburgh, investment is occurring around the casino, but it is more coincident to the casino's location next to the regional sports stadia (Pennsylvania-Interviewee-3 2010). In any event competition is probably not significantly affecting barely discernible spillover effects.

From a jobs perspective, casino employment has an obvious interpretation, but often displaces other jobs within the community. If casino jobs are better than the alternatives (jobs with fewer benefits or no jobs), losses in casino employment are significant to communities. If casino jobs are of relatively poor quality and/or the jobs do not go to locals, it is uncertain whether jobs losses due to competition are a casualty.

Community and economic development funds are larger concerns in local contexts than economic spillovers. These are more common in urban areas (i.e. Pittsburgh and East Chicago) and can either be lump sums or percentages of gaming tax.[26] Rivers Casino in Pittsburgh will pay the North Side Leadership Conference $1M annually for three years beginning in 2010 for residential and commercial development in North side neighborhoods (Rotstein 2009). In East Chicago, IN the Ameristar Casino devoted 3.75% of its annual revenue to economic development, of which 1% goes directly to the city (Hinkle 2010). Local development agreements vary by locality, even within the same state, but funds based on percentages are subject to the same competitive forces that drive state tax revenues downward. Lump sum payments are more likely to be resistant to competitive pressures.

Racing Industry

A local development section would not be complete without mentioning racinos. Support for racetracks was a common theme across many of the regions. In addition to setting aside for money for

[25] Casinos are expected to have complementary effects on restaurants service stations and free-standing retail (Wiley and Walker 2009).

[26] These funds are separate from local shares of gaming or admission tax revenue.

state and local general budgets, economic development and tourism, Illinois, Indiana, West Virginia, and Pennsylvania specifically designate funds for the support of the horse racing industry (Massachusetts is proposing to co-locate slots with the racetracks). While there is little overlap between the two forms of gambling (Walker and Jackson 2008)[27], racetracks have argued that their businesses suffer when slots are offered in other locations (Pierce and Miller 2004, 104). To compensate the industry for its loss, funds are set aside to encourage breeding, increase the prizes for winnings and allow for more races.

Why support gambling in one industry at the expense of another? In some regions (Illinois, Indiana, and West Virginia), horse and dog racing have a long histories leading to concentrations of commerce focused on racing. To the extent that horseracing is more labor intensive than a casino, the transfer of money makes sense from an economic development/jobs perspective. Horseracing has been bolstered by the purse increases provided by the slot machines. If slot revenue declines, horseracing funds drop which jeopardizes some of the growth seen in the racing industry.

Conclusion

Interstate competition occurs over several dimensions including regulation, amenities, and geography. Due to initial conditions like presence of large metropolitan areas and level of dependency on gambling revenues, some areas are more vulnerable than others. Several places had local development agreements (mostly urban) or racetracks supported by slot revenue (mostly rural). If the agreements are based on percentages of total AGR, they are subject to the same casino competition as state tax revenues. Casino competition should lessen the impacts of these funds.

[27] Walker and Jackson suggest that casinos and racing actually complement each other instead of acting as substitutes.

Appendix II: Heckman Correction for Selection Bias

Given the regulation, politics, and economic conditions that go into a casino locating in a particular county, there is potential for selection bias. Though every county could potentially be affected by the presence of a casino some places could never have casinos because of this selection bias. In the case of the casinos, the magnitude of change in economic indicator could be related to self-selection of that county into the treatment group (i.e. counties that have comparatively more to gain from casinos are more likely to allow them). Using the Heckman method (Stock and Watson 2003), I specify a first stage probit equation with a binary dependent variable indicating that a county has a casino (*CasinoCounty)* at the beginning of both of the time periods (1997 and 2002). For explanatory variables I include economic trends from 1992 to 1997 and from 1997 to 2002, respectively for the two periods, along with regulatory (*StateLottery*) and geographic variables (*Dist_to_MajorMetro*).

Table A-1 Probit Regression Model for Selection Bias

	Coefficient	Std. Error		P-Value
Dependent Variable: *CasinoCounty*				
Economic Indicators from Previous Period				
Chng_Income_t-1	0.1170	(0.044)	***	0.008
Chng_Jobgrowth_t-1	0.0104	(0.441)		0.981
Chng_Unempl_t-1	5.1055	(2.922)	*	0.081
Other Variables				
%Chng_Pop_1990s	2.4108	(0.694)	***	0.001
StateLottery	0.4795	(0.459)		0.297
Dist_to_MajorMetro	-0.0018	(0.002)		0.318
StateBorder	0.7789	(0.264)	***	0.003
TribalArea	7.7311	(2.165)	***	0.000
Constant	-2.5455	(0.727)	***	0.000
	Number of observations:			6145
	Wald Chi Squared:			24.34
	Model P-value:			0.0020

The results of the first stage (listed in Table A-1), suggests that being in a state with a large percentage of Native American land (*TribalArea*) was most significantly related to the presence of a casino. Also, growing areas (*%Chng_Pop1990s*), counties on state borders (*Border*), and counties with growing income (*Chng_Income_t-1*) were also likely candidates to have (not obtain) casinos. I use the results of this probit regression to calculate the Inverse Mills Ratio (*MillsRatio)*, which is included in the second stage of ordinary least squares (OLS) regressions in Table 5.2.

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