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The Economic Impacts of Casino Gambling at the State and Local Levels

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ABSTRACT: This article describes and discusses the components of an economic impact analysis of casino gambling in state and local economies. The article focuses on the positive and negative economic impacts of casino gambling and how large these impacts are likely to be in specific old and new gambling jurisdictions. An emphasis is given to the consequences of market structures used by specific jurisdictions in issuing gambling licenses. The article suggests that monopolistic and oligopolistic market structures are, in general, the major reasons for economic losses for state and local economies when they legalize casino gambling.

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NOTE: The views expressed in this article are solely those of the author and do not necessarily reflect the views of the Federal Reserve Bank of Kansas City or the Federal Reserve System.

THE gambling industry has been among the strongest growing industries in America. Over the last three decades, the United States went from having one state with legalized commercial casinos and a few states with pari-mutuel wagering or charitable bingo to a country with legalized gambling in 48 of 50 states.[1] All legal gambling-generated gross revenues (wins) were estimated to total $47.7 billion in 1996 (Christiansen and Cummings 1997).

Among the different gambling enterprises, casinos have experienced the fastest growth rates in terms of revenue. For many years, Nevada had a monopoly on legal commercial casino gambling in the United States. New Jersey permitted casino gambling beginning in 1978, Iowa and South Dakota in 1990, and six other states have authorized commercial casinos since. Commercial casinos won about $19.1 billion from players in 1996 (Christiansen and Cummings 1997). Casino and other types of gambling on Indian reservations have spread quickly across the country as a result of the Indian Gaming Regulatory Act of 1988. As of February 1997, 142 compacts had been negotiated for Indian gaming, with estimated revenues of as much as $5.4 billion in 1996 (Christiansen and Cummings 1997).[2]

There are many reasons for the continuous spread of gambling in the United States. Gambling has become an acceptable form of entertainment as some states, churches, and other charitable institutions promoted gambling such as lotteries, charitable bingo, and events such as "Las Vegas nights." Additionally, as large corporations started to run casinos, the public perception of gambling as a sinful or immoral activity linked to crime and the Mafia changed to an image of a clean, safe, theme-oriented activity such as that taking place in contemporary Las Vegas and Atlantic City. The budget problems faced by local and state governments in the last decades have also helped the spread of legalized casino gambling. Politicians saw gambling as a politically painless way to increase revenues without creating compulsory new taxes or increasing old ones. Regardless of the reasons for the spread of gambling, the industry is a reality across the United States.

The pace of the spread of gambling was not accompanied by a comparable number of studies dealing with the consequences of this expansion. There is a lack of comprehensive evaluations of the economic impact of gambling activities in the United States. See Grinols and Omorov (1996) for opposite views on the issue at the national level. There are many reports on the impact of casino gambling at the local and state levels. For a review of some of them, see Thompson, Gazel, and Rickman (1995). However, the majority of these reports were commissioned by the gaming industry (Goodman 1994), and most of them focus exclusively on the positive impact of casino gambling and completely ignore or minimize the negative impacts that are also associated with casino gambling.

The present article discusses the major aspects of an impact analysis of casino gambling at the state and local levels. It focuses on a theoretical

model, and it uses some empirical examples to illustrate the different parts of the model.

THE ECONOMIC IMPACT ANALYSIS

The discussion here is restricted to the monetary impact of casino gambling on local and state economies. Traditional economic studies would also include as part of the economic impact of a casino in a particular area the changes in consumer's satisfaction (measured through equivalent variation) due to availability of gambling locally. However, this approach is also controversial due to the existence of compulsive gamblers, who, most likely, are not able to act as a rational consumer when making their consumption decisions. For a discussion of this issue, see Grinols and Omorov (1996).

Theoretically, it is possible to estimate the economic impact of a casino establishment on any specific area. For example, one could estimate the monetary impact of an Illinois casino on the Brazilian economy. However, such an impact would be trivial if not nil. Thus, in defining the areal unit to use in order to estimate the economic impact, the researcher must keep in mind its economic, political, or social relevance. This article focuses on the local and state economies because these are the most relevant units for policy purposes as well as the most common regional definitions for estimation of economic impacts of casinos at the subnational level available in the literature.

State boundaries are assumed if impacts are to be estimated at the state level. However, the researcher must define the boundaries of a local economy when estimates are calculated for areas within a state. The definition of a local economy is, in general, arbitrary. However, the level of arbitrariness varies substantially between studies. Gravity models are usually useful in determining the borders of a region (within a state) most likely to be economically affected by a casino. A very large casino with additional retail space is more likely to influence economically a larger area than a small casino with no other economic activity besides gambling.

A rule of thumb is to use the host county (where the casino is located) as the local economy for which to measure the economic impact of a casino. The advantage is the availability of data at the county level for many variables included in the impact analysis. For example, many casino jurisdictions divide gaming taxes between state and county governments. The disadvantage is that the county level is an arbitrary, although convenient, regional unit. Again, the size of the county and the size and location of the casino within the county will play an important role in whether the county unit makes sense economically. In many studies, a ring is drawn on a map around the casino location as the boundary of the local area; the ring can coincide or not with the city, county, or state boundaries. The diameter of the circle is, in general, arbitrarily defined. Different studies use different radii around a casino as the local economy. Independent of the method used, when the researcher defines the local economy bounda-

ries, the collection of data to be used in the impact analysis can start.

THE ECONOMIC IMPACT MODEL

As noted before, this article focuses on the monetary impacts of a casino establishment in a specific economy. There are many different approaches one can take in order to estimate the monetary (economic) impact of such an establishment. Models can vary from very sophisticated, complex, and comprehensive general equilibrium models to very simple export-base models.

Sophisticated models are, at least theoretically, more accurate since they take into consideration many economic relations that are absent in simpler models. A good example is the impact that a new casino would have on the labor market of a small local economy. Simple models, in general, assume that no impact occurs in the local labor markets. On the other hand, more sophisticated models would take into consideration changes in supply and demand for labor and the resulting real wage changes and their impact on all sectors of the local economy. However, sophisticated models are more expensive than simple models in terms of monetary costs, time to specify, and data requirements. Input-output (IO) models are a middle-of-the-road compromise that are quite popular among regional economists. IO models take into consideration the relationships between the different sectors in the economy, although they do not allow for changes in the labor market and technology. They also assume fixed prices for goods and services. Unless the disturbances to the labor market are substantial, fixed prices and given technology are not likely to be a major concern for the short-run estimates. In this article, I discuss a simple IO model to estimate the economic impact of a casino in a specific economy. IO models are easy to use and their most important feature, economic multipliers, are easily available from different sources in the literature. It is important to note that the use of the same type of model by different people does not result necessarily in similar economic estimates. Many assumptions are made in estimating the economic impact of a casino, and they are, in general, a major cause for very large differences observed in estimates done by different people.

The basic features of the model

In calculating the economic impacts for a specific economy, first one must estimate the direct and indirect positive and negative economic impacts. The net impact of the presence of a casino in the local economy is the result of subtracting the negative direct and indirect impacts from the positive direct and indirect impacts.

The positive direct impact is the sum of all monetary income generated by casino operations and the expenditures in noncasino businesses made by visitors while in the local area. Visitors are those casino patrons who live outside the boundaries of the local economy. The positive direct impact does not include expenditures by the casino and visitors in businesses outside the local economy

since those expenditures would not represent a monetary injection into the local economy. The positive direct impact includes the expenditures made by casino wages and salaries, expenditures on supplies purchased from local vendors, maintenance, local purchases of food and beverages, advertisement, insurance, utilities, new construction, local tax revenue, and visitor expenditures in local noncasino businesses such as lodging, food, beverage, retail shopping, entertainment, and local transportation (see Table 1).

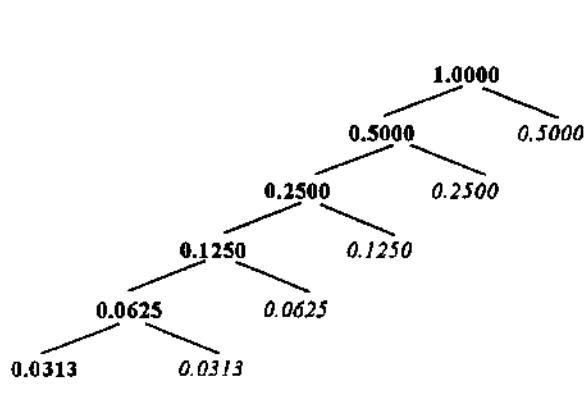
In providing goods and services to the casino, casino employees, and visitors, local businesses pay wages and salaries to their own employees and buy intermediate goods and services from other businesses. This represents a second round of expenditure, which in its turn generates a third round and so on. The sum of all these other rounds of indirect expenditures rippling through the economy is known as the multiplier effect (indirect impact) on the local economy.[3]

TABLE 1
DIRECT POSITIVE ECONOMIC IMPACTS

Source	Type of Expenditure
1. Casino	1.1. Wages and salaries of local employees
	1.2. Purchases of goods and services from local suppliers
	1.3. Local advertisement
	1.4. Utilities
	1.5. Insurance from local providers or brokers
	1.6. New construction
	1.7. Maintenance
	1.8. Local taxes
	1.9. Share of profits staying within the local economy
	1.10. Other direct expenditures within the local economy
2. Nonlocal visitors	2.1. Lodging outside casino
	2.2. Food and beverages outside casino
	2.3. Shopping outside casino
	2.4. Entertainment outside casino
	2.5. Local transportation
	2.6. Tour bus if provided by local companies
	2.7. Other direct expenditures in the local economy

The indirect effect is the result of several rounds of spending over time after the first direct spending round takes place. However, not all successive spending ripples through the economy. Part of the amount spent in the first round is lost or leaked from the local economy, being spent to import goods and services from businesses outside the community (region) or being saved, that is, not spent at all. It is the local expenditures of the first round that are used to pay for goods and services in the second round. The amounts spent in all subsequent rounds depend on the local society's average propensity to consume local goods and services. Suppose that for every dollar spent in the local community after the first round, half of it is used to purchase local goods and services and the other half is saved or spent on imports. Imports include all goods and services supplied by businesses located outside the local economy. Thus the first dollar is spent in the local economy in the first round, but only half is spent in the second round, a quarter in the third round, and so on. Figure 1 shows the expenditure effects in each round. After the sixth round of spending, an additional $0.9688 (indirect expenditure) has been spent in the

FIGURE 1
ECONOMIC EFFECTS BY ROUNDS OF CONSUMPTION



Cumulative Spending	Round
1.0000	First Round
1.5000	Second Round
1.7500	Third Round
1.8750	Fourth Round
1.9375	Fifth Round
1.9688	Sixth Round

NOTE: Numbers in bold represent local expenditures, and numbers in italics represent leakages.

economy. It is shown that for a propensity to spend equal to 0.5, the local multiplier is equal to 2. As a result, an initial expenditure of $1 results in a total expenditure of $2 (one of direct and one of indirect).

The multiplier to be used depends on both the amount of money to be spent on the study and the time to be spent on it. Producing one's own multipliers through published and survey data would be very expensive. The best alternative is to use multipliers already calculated by other sources such as IMPLAN or RIMS II. RIMS II regional multipliers are calculated by the Bureau of Economic Analysis of the United States Department of Commerce; IMPLAN multipliers are produced by MIG, Inc., a Minnesota group. In general, there is no substantial variation among multipliers from different sources for any specific county in the U.S. For a comparison of multipliers from different sources, see Rickman and Schwer (1995). The negative impact, as in the case of the positive impact, is also the sum of direct and indirect effects. There are three major negative impacts (costs to the local economy) to be estimated: the cannibalization impact; additional public expenditures; and negative externalities (see Table 2).

The so-called cannibalization effect is well known, and it is not restricted to gambling activities. It refers to the reduction of economic activity of other businesses when a new firm comes to a community, resulting in shifts in local residents' expenditures from previously operating businesses to the new one. An easy example is the effect of the opening of large and more competitive firms such as Wal-Mart on small retailers in small communities. In the case of a casino, local patrons may shift their expenditures away from local businesses, such as restaurants and movie thea-

TABLE 2
DIRECT NEGATIVE ECONOMIC IMPACTS

Type of Impact	Source	Type of Expenditure
Cannibalization	1. Local gambler	1.1. Share of casino wins due to local gamblers' losses 1.2. Expenditures on food and beverages within the casino 1.3. Shopping within the casino 1.4. Other expenditures within the casino
	2. Noncasino visitor	2.1. Share of casino wins due to noncasino visitors' losses 2.2. Expenditures on food and beverages within the casino 2.3. Shopping within the casino 2.4. Other expenditures within the casino
Additional public sector expenditures	3. Government	3.1. Regulation and supervision of casino 3.2. Additional police force* 3.3. Additional fire protection 3.4. Infrastructure (new roads and maintenance, etc.) 3.5. Other expenditures due to the presence of casino
Negative externalities	4. Higher crime rates†	4.1. Additional public expenditures on police, prosecution, and court costs 4.2. Additional corrections costs 4.3. Additional private costs of protection such as alarms, guards 4.4. Additional costs of crimes against persons and property
	5. Gambling addiction	5.1. Additional costs due to increased incidence of problem and compulsive gambling

*Excludes costs associated with higher crime rates.
†Excludes costs associated with problem and compulsive gambling.

ters, to the casino. If the ratio of local to nonlocal gamblers is high, these cannibalization effects can be substantially large.

There is, however, a fraction of local residents who gamble in a local casino who would travel someplace else to gamble in the absence of casinos in their communities. Most likely, these local residents would gamble less often outside the area than they would gamble locally. Therefore, part of their expenditures should not be included as a negative impact. These expenditures (included as a positive impact) would have been lost to the local area in the absence of a local casino and thus do not represent a leakage from the local economy.

A second cannibalization effect deals with expenditures by nonlocal residents who would have visited the area even in the absence of the casino. Their expenditures, included as a positive impact, do not represent new income for the area since they would have made these expenditures in the local economy anyway. This represents an expenditure shift away from local noncasino businesses to the casino activities. In this case, local businesses such as restaurants, bars, and movie theaters lose revenues due to the presence of casinos and their lost income

should be counted as a negative impact.

The additional public sector expenditures, if any, due to the presence of the casino should be counted as a negative impact, as the counterpart of tax revenues generated by the casino included on the positive side. Such expenditures include costs due to casino regulations and supervision by gaming boards or other institutions, new roads, additional police officers and firefighters, among other things.

Negative externalities are generally omitted in most economic impact studies of casinos. Most economic activity results in some type of negative externality, costs borne by everybody whether they are involved with that activity or not. For example, a convenience store brings additional traffic congestion and noise to a particular area. Even those who do not patronize that store bear those negative costs.

There are two main negative externalities associated with a casino in a new jurisdiction. First, it is likely that additional tourists and additional concentrations of people carrying cash will lower the opportunity costs associated with some types of crime, resulting in a higher crime rate for the area (Thompson, Gazel, and Rickman 1996b). Higher crime rates result in higher costs for police protection, incarceration, courts of law, and so forth. The second and maybe the most important negative externality deals with the problems of additional problem and compulsive gamblers. There is plenty of evidence that incidence rates of problem and compulsive gambling increase as gambling becomes available in a convenient way. Independent of the reasons why some people experience gambling as a problem, there are costs associated with it and they are paid by society as a whole and must be included in the negative side of an impact analysis. It is important to note that it is not easy to estimate the increase in incidence rates due to a new casino, but there are some estimates in the literature, which helps a researcher to incorporate this important feature into the analysis.[4]

The estimated additional number of problem and compulsive gamblers due to the casino is equal to the increase in the incidence rate times the number of adults in the area. The costs associated with these gamblers are the product of the additional number of problem and compulsive gamblers and the estimated average annual costs per problem or compulsive gambler.

There is considerable debate about the extent of social costs associated with an average compulsive gambler. The following items are included among the costs in many studies dealing with costs of compulsive gambling: loss of productive work time by the compulsive gambler; criminal justice systems costs—from police work through prison maintenance— resulting from crimes perpetrated by compulsives; insurance moneys protecting businesses from embezzlement by compulsives; social work counseling costs; other treatment costs; and family welfare costs.

These studies give a range of numbers (not adjusted for inflation) from

$13,000 to $52,000 a year. See Kindt (1994) and Thompson, Gazel, and Rickman (1996a) for a review of the literature and estimation of the costs of compulsive gambling.

Collection of primary and secondary data

The major primary source of data for an economic impact analysis of a casino should be casino-site interviews of actual gamblers. A well-designed survey questionnaire should be answered by a random sample of casino patrons. In order to have the best sample possible, interviews must be conducted in different seasons, at different times of day, and on different days of the week.

The following list specifies the minimum information a survey must collect from respondents in order to have enough data to estimate the economic impact of a casino:

- place of residence, including distance from casino site, in order to classify the respondent as a local or nonlocal gambler and frequency of visits;
- in case of nonlocal visitors, the main reason to visit the area: for the casino or for other reasons such as business, visiting friends or relatives, vacation, and so forth;
- in case of locals, whether they would visit other casinos outside the area in the absence of the local casino and how often;
- expenditure patterns within and outside the casino per visit: gambling, food, beverage, shopping, entertainment, local transportation, and other expenditures; and
- additional information concerning demographics, alternative allocations of income in the absence of the local casino, and other areas that the researcher finds important for the study.

Among other types of data, the following, when available, are helpful in estimating the economic impact of casinos:

- casino data, such as expenditure patterns of the casino as shown in Figure 1;
- gaming board data, including data on casino revenues, number of casino visits, average gaming revenue per visitor, gaming and other taxes, casino employment, and so forth;
- alternative economic information, such as output and employment multipliers (multipliers, as discussed before, are available from alternative sources).

THE ESTIMATED ECONOMIC IMPACT OF CASINOS

The question to be answered here is, Will a casino have a positive economic (monetary) impact on a local (county, state, or other) economy? The answer depends on many facts and their resulting impacts on the positive and negative sides of the equation. Some of these facts are discussed in the following text, following the same structure as shown in Figure 2 and Table 2. The comments focus on how these impacts are likely to differ from one jurisdiction to an-

TABLE 3
POSITIVE ECONOMIC IMPACT OF CASINO GAMBLING IN WISCONSIN, 1995 (Millions of dollars)

Source	Type of Expenditure	Direct Expenditures	Multiplier	Indirect Impact	Total Impact
1. Casino	1.1. Wages and salaries of local employees	128.00	1.91	116.66	244.66
	1.2. Purchases of goods and services from local suppliers	26.40	1.82	21.52	47.92
	1.3. Local advertisement	19.70	2.01	19.84	39.54
	1.4. Utilities	4.40	1.46	2.04	6.44
	1.5. Insurance from local providers or brokers	7.30	2.40	10.26	17.56
	1.6. New construction	27.00	2.22	32.82	59.82
	1.7. Maintenance	26.40	2.17	30.85	57.25
	1.8. Local taxes	0.00		0.00	0.00
	1.9. Share of profits staying within the local economy	257.36	2.15	295.60	552.96
	1.10. Other direct expenditures within the local economy	94.00	1.95	89.35	183.35
Total casino expenditures		590.56		618.94	1,209.50
2. Nonlocal visitors	2.1. Lodging outside casino	36.70	1.93	34.21	70.91
	2.2. Food and beverages outside casino	12.34	2.31	16.16	28.50
	2.3. Shopping outside casino	15.96	2.04	16.56	32.52
	2.4. Entertainment outside casino	3.08	1.93	2.87	5.95
	2.5. Local transportation	7.99	2.02	8.13	16.12
	2.6. Tour bus if provided by local companies	23.32	2.02	23.73	47.05
	2.7. Other direct expenditures in the local economy	0.00		0.00	0.00
Total nonlocal visitors		99.39		101.66	201.05
Total positive impact		689.95		720.60	1,410.55

other after accounting for differences in casino size. Tables 3 through 8 provide examples of estimates of the positive, negative, and net economic impacts of casino gambling in the states of Wisconsin and Illinois, respectively. See Thompson, Gazel, and Rickman (1995) and Thompson and Gazel (1996) for detailed explanations on how those estimates were calculated.

The positive side:
Casino expenditures

1.1. Wages and salaries. Wages and salaries may vary between jurisdictions. However, these differences are likely to be relatively small since skill levels and ratios of employees per machine and gaming table are similar across casinos. Differences will be larger if casinos have adjacent hotels and other businesses besides gambling. Nonetheless, it is highly unlikely that wages and salaries will play a major role in the differences of economic impacts across casinos.

1.2. Purchases of goods and services from local suppliers. Larger local economies are more likely to supply larger shares (from local suppliers) of goods and services to a local casino

TABLE 4

POSITIVE ECONOMIC IMPACT OF CASINO GAMBLING IN ILLINOIS, 1995 (Millions of dollars)

Source	Type of Expenditure	Direct Expenditures	Multiplier	Indirect Impact	Total Impact
1. Casino	1.1. Wages and salaries of local employees	264.99	2.44	381.29	646.28
	1.2. Purchases of goods and services from local suppliers*	191.46	2.11	213.19	404.65
	1.8. Local taxes	296.61	2.28	378.53	675.14
	1.9. Share of profits staying within the local economy	22.82	2.44	32.84	55.66
	1.10. Other direct expenditures within the local economy				
	Total casino expenditures	775.88		1,005.85	1,781.73
2. Nonlocal visitors	Total nonlocal visitors†	48.95	2.42	69.43	118.38
Total positive impact		824.83		1,075.28	1,900.11

*Includes local advertisement, utilities, insurance from local providers, and maintenance.
† Includes all expenditures in noncasino businesses while in the area.

than smaller economies are. For example, at the state level, casinos make most of their purchases from in-state vendors in states such as Illinois. Gaming machines, tables, and other gaming equipment are, in general, purchased from producers located in other states, such as Nevada.

1.3. Local advertisement. The size of these expenditures locally depends on the size of the advertisement budget as well as the location of advertising agencies and media vehicles used by the casino. It also depends on the target market for the casino, for example, on whether the casino wants to target local or outside markets.

1.4. Utilities. At the state level, utility expenditures will be considered local expenditures. At substate levels, these expenditures depend on the location of the casino and the utility companies.

1.5. Insurance. As with local advertisement and utilities, the impact of insurance expenditures depends on whether insurance companies are local or not. In most cases, representatives (brokers) of insurance companies are located in the area. This item is most likely to be very similar for most of the gambling jurisdictions.

1.6. New construction. Jurisdictions where the number and size of casinos are substantially restricted by regulation will show close to no expenditures on new construction. Nevada is a major exception in the United States since casinos can reinvest in new properties. In most other jurisdictions, legislation limits the number of gaming licenses that are issued.

1.7. Maintenance. Expenditures on maintenance are likely to be local and similar across jurisdictions.

1.8. Local taxes. State and local taxes vary substantially across jurisdictions. Native American casinos are not required to pay gambling taxes or many other taxes, such as state corporate income taxes. However, many Native American casinos pay a "voluntary" amount of income to state and local governments in order to keep a monopoly on casino gambling in the area. Foxwoods, in Connecticut, is a good example.

Commercial casinos face different gambling tax rates in each jurisdiction, from as low as Nevada's average of 8 percent to as high as Illinois's 20 percent. Some states also have an admission tax. Individual states use different methods to divide tax revenues among different levels of government. Tax revenues can make a large difference in the economic impact of casino gambling across jurisdictions.

1.9. Share of profits. This is perhaps the most important item on the list of positive impacts of a casino on a local economy. Profit as a share of gross revenues varies substantially across jurisdictions. Casinos facing substantial competition experience lower rates of profit than casinos operating as monopolies or oligopolies. Casinos in Illinois, for example, experience little to no competition within their market boundaries, and, as a result, most of them have experienced very high profit rates. The situation has changed somewhat for some of them since casinos opened in Indiana.

Monopoly and oligopoly market structures resulting in above-normal profit rates (or, in economic terminology, positive economic profits or positive economic rents) affect the local economy very differently from the way in which a competitive market with normal profit rates does. For example, profit rates (before corporate taxes) above 30 percent of gross revenues (even higher for some casinos) represent, in general, a much higher share of total revenues than do expenditures on wages and salaries. If a large share of profits is reinvested locally or distributed to local shareholders (with most of the income staying in the local economy), the positive impact can be large; otherwise, the positive impact of profits will be small. In summary, if profits represent a large share of total revenues and most of it leaves the local economy, the direct positive impact of the casino is likely to be small.

Corporations located in Nevada and New Jersey own most of the casinos in new gambling jurisdictions in the United States. Additionally, many new gambling jurisdictions adopted a monopoly or oligopoly market structure. The result of such a strategy is that, in most of the new gambling jurisdictions, the positive monetary impact of casinos is relatively small compared to gross casino revenues. More competitive jurisdictions such as Las Vegas, Atlantic City, and southern Mississippi are more likely to experience higher ratios of positive impact to gross revenues. It is also important to notice that Na-

tive American casinos (most of which operate under a monopoly market structure) are likely to reinvest their high profits in the local economy, resulting in a high ratio of positive impact to gross revenues.

Expenditures by nonlocal visitors on noncasino businesses

2.1-2.4. Lodging, food and beverages, shopping, and entertainment outside the casino. The size of these expenditures depends mostly on three conditions: the share of nonlocal to total casino gamblers; how far away nonlocal visitors live from the casino site; and how attractive and competitive noncasino businesses are compared to the casino. The impact of expenditures of nonlocal visitors on noncasino business is likely to be small if the casino targets basically the local market and day-trippers from adjacent areas. Most of the new jurisdictions have failed to attract a substantial number of tourists to their local areas. Additionally, very often casinos offer subsidized food and beverages, charging prices below the cost of production and thereby reducing or eliminating competition. Monopoly and oligopoly market structures are likely to result in a low ratio of nonlocal to total casino gamblers. In other words, if casinos can be profitable catering only to the local market, there is no incentive to increase spending to attract nonlocal visitors. In the absence of sufficiently large local markets, casinos, in order to survive, must expand their markets beyond local boundaries.

2.5. Local transportation. As a general rule, only nonlocal visitors staying overnight demand local transportation services. Local residents and day-trippers are likely to use their own transportation.

2.6. Tour buses. In many jurisdictions, casinos subsidize local companies to transport local gamblers and gamblers from adjacent areas to their properties. Once again, market structure plays a significant role in determining the need to attract nonlocal visitors.

The negative side

1. Cannibalization due to local gamblers. There are some controversies surrounding the cannibalization effect. The casino industry in general has argued that there is no evidence of reduced expenditures on other businesses due to increased expenditures on casino gambling. To prove this point, the industry shows expenditure growth in both casinos and other entertainment services, including noncasino consumption items. However, expenditure growth has been substantially higher in the casino industry than expenditure growth in other consumption items and, most important, growth in personal income.

There is no doubt that some expenditure shift occurs when a casino starts operation in a specific area. The microeconomic argument that consumers know best how to allocate their dollars has some merit in the case of a casino. For occasional gamblers,[5] the shift of expenditures from

any previous consumption item to gambling is not different from shifting their preferences from movie going to a dinner in a restaurant. However, for problem or compulsive gamblers, the decision is not rational and the implications of their gambling activity are severe, as will be discussed later.

In summary, there is a shift in expenditures, and some established businesses are likely to lose with the presence of the casino. In a strict monetary sense, a shift of expenditures from one activity to another does not represent new income for the local economy. Since expenditures by local gamblers were counted on the positive side, they should also appear on the negative side. However, in the absence of a local casino, some local residents would travel to gamble in other jurisdictions and their expenditures would be lost to the local economy. Yet these local gamblers are likely to visit a casino outside the local area less often than they would visit a local casino. Thus, from survey data, adjustments can be made to estimate the share of their current expenditures in the local casino that would have leaked from the local economy in the absence of gambling locally.

The foregoing discussion applies to all types of expenditures (listed in Table 2, 1.1 to 1.4) by local residents within the casino. It is important to note that the share of local residents who would travel and spend their money someplace else in the absence of the local casino may be different by type of expenditure, especially if the casino property offers consumers goods and services other than gambling. The survey data discussed previously in this article can provide information to estimate the size of the impact of local residents' gambling activities on the local economy.

2. *Cannibalization due to noncasino visitors.* The size of this effect depends on the share of noncasino to total visitors. Expenditures within the casino by noncasino visitors are included on the positive side. The part of those expenditures that represents a decrease in demand for noncasino businesses (shift of expenditure pattern from noncasino toward casino activities) represents a loss of income for the local economy and should be included on the negative side as well. Survey data can help to distinguish between a shift in expenditures and additional expenditures in the casino. For example, there will be no negative effects if a noncasino visitor keeps the same level of expenditures in noncasino businesses before and after the casino opens and he or she gambles in the casino as well. However, there is evidence that this is not the average behavior and that some expenditure shift occurs when casinos open in a specific area.

3. *Government expenditures.* Government expenditures are very difficult to estimate since it is not easy to identify the additional public expenditures resulting from the presence of the casino. Interviews with public officials and comparisons of public spending before and after the casino

opens can help in assessing these costs. However, it is very important to control for causes other than the casino's influence on the growth of public spending.

4. Higher crime rates. Increased crime is also a controversial item in the literature and in the public policy area in general. Some people argue that investigating the relationship between casino gambling and crime using crime rates (based on population numbers) is misleading since these rates do not take into account the large number of tourists visiting gambling jurisdictions and, in reality, inflating crime rates. However, other studies show that independent of the tourist-population effect, there is evidence of a relationship between certain types of crime and gambling activity.

Thompson, Gazel, and Rickman (1996b), using crime rate data for each of Wisconsin's 72 counties for 14 years, find a statistically significant relationship between casino gambling and different types of crime. Their results suggest that the presence of a casino in a county or the presence of a casino in two adjacent counties explains a major crime rate increase of 6.7 percent beyond what would otherwise be experienced in the absence of casinos. Friedman, Hakim, and Weinblatt (1989), investigating crime spillover from Atlantic City to other localities in the region, conclude that "the statistical results suggest that casinos might have 'brought' significantly more crime than the population increase warranted" (622).

The lower opportunity costs for criminal activities are most likely the main reason for the increase in crime rates associated with casino gambling. Large agglomerations of people carrying cash and less alert than usual make it easier for criminals to act and reduce their chances of getting caught.

It is not easy to estimate the social costs of an increased incidence of crime due to casino gambling. Econometric models help in assessing the incidence rate, but additional information on cost per type of crime is difficult to estimate. However, based on some published information from the Department of Justice and state, county, and city information on crime and government budgets, one can make better estimates of social costs than using ad hoc guesses.

5. Gambling addiction. As discussed before, there is evidence that as gambling becomes available in a convenient way, the incidence of problem and compulsive gambling is likely to increase. The difficult task is to estimate the number of additional problem and compulsive gamblers due to the presence of the casino and the costs to society associated with them. Again, there are different ways to accomplish the task. The ideal approach is to conduct two surveys, one prior to the introduction of the gambling enterprise and one afterward and compare the estimated incidence rates yielded by the two. However, even in this ideal world, there are many difficulties. How long after the opening of the gambling enterprise should the second survey be con-

TABLE 5

ESTIMATED NEGATIVE ECONOMIC IMPACT OF CASINO GAMBLING IN WISCONSIN, 1995 (Millions of dollars)

Type of Impact	Source	Type of Expenditure	Direct Expenditures	Multiplier	Indirect Impact	Total Impact
Cannibalization	1. Local gambler	1.1. Gambling losses	387.38	1.91	353.05	740.42
		1.2. Food and beverages	38.74	2.31	50.71	89.45
		1.3. Shopping	4.97	1.91	4.53	9.51
		1.4. Other expenditures	83.31	1.91	75.93	159.24
	2. Noncasino visitor	2.1. Gambling losses	29.35	2.01	29.64	58.99
		2.2. Food and beverages	2.75	2.31	3.60	6.36
		2.3. Shopping	2.08	2.04	2.16	4.24
		2.4. Other expenditures	7.81	2.00	7.83	15.64
	Total cannibalization		556.39		527.45	1,083.85
Additional expenditures	3. Government	Not estimated				
Negative externalities	4. Higher crime rates	Additional costs	20.00			20.00
	5. Gambling addiction	Social costs	117.74			117.74
	Total externalities		137.74			137.74
Total negative impact			694.13		527.45	1,221.59

TABLE 6

ESTIMATED NEGATIVE ECONOMIC IMPACT OF CASINO GAMBLING IN ILLINOIS, 1995 (Millions of dollars)

Type of Impact	Source	Type of Expenditure	Direct Expenditures	Multiplier	Indirect Impact	Total Impact
Cannibalization	1. Local gambler	1.1. All expenditures	738.64	2.42	1,047.68	1,786.32
	2. Noncasino visitor	2.1. All expenditures	57.01	2.11	63.49	120.50
	Total cannibalization		795.65		1,111.17	1,906.82
Additional expenditures	3. Government	Not estimated				
Negative externalities	4. Higher crime rates	Not estimated				
	5. Gambling addiction	Social costs	280.07			280.07
	Total negative externalities		280.07			280.07
Total negative impact			1,075.72		1,111.17	2,186.89

TABLE 7
ESTIMATED TOTAL ECONOMIC IMPACT OF CASINO GAMBLING IN WISCONSIN, 1995 (Millions of dollars)

Source	Direct Expenditures	Indirect Impact	Total Impact
Positive impacts	689.95	720.60	1,410.55
Negative impacts	694.13	527.45	1,221.58
Net impacts	–4.18	193.15	188.97

TABLE 8
ESTIMATED TOTAL ECONOMIC IMPACT OF CASINO GAMBLING IN ILLINOIS, 1995 (Millions of dollars)

Source	Direct Expenditures	Indirect Impact	Total Impact
Positive impacts	824.83	1,075.28	1,900.11
Negative impacts	–1,075.72	–1,111.17	–2,186.89
Net impacts	–250.89	–35.89	–286.78

ducted? One can argue that the incidence of problem and compulsive gamblers is likely to increase with time (after the opening of a casino) up to a point where a potential or natural rate is achieved. On the other hand, some could argue that rates are likely to be higher at the beginning and decrease with time to the natural incidence rate. That rate should be, at least theoretically, close to the prevalent rates in older jurisdictions such as Las Vegas. Thus the incidence rate estimated by a survey conducted one, two, or three years after a casino opens in a specific area perhaps underestimates—or overestimates—the long-run real incidence rate.

In the real world, one is faced with two more realistic scenarios: either to estimate future incidence rates (when the casino is not yet in operation) or to estimate the increased rate when the casino is already in operation. The first scenario is the case of an estimate of the economic impact of a future casino in a particular area. The only alternative to this scenario is to use estimates available in the literature. One must use estimates, if available, for regions with casinos and gambling markets of comparable sizes. For the second scenario, a survey can be conducted to estimate the prevalence rate in the presence of the casino. However, it is unlikely that the researcher will find an estimate of the incidence rate prior to the existence of the casino, the benchmark rate to which the actual estimate could be compared. In this case, the choice of a benchmark rate is, in some degree, arbitrary. The researcher could choose prevalence rates, if available in the literature, for similar regions without a casino, or other general estimates such as the rate estimated by the 1975 Commission for the Study of National Policy on Gambling.

The second task is to estimate the average annual social costs per problem gambler or compulsive gambler.

Once again, one can estimate the costs using a detailed survey conducted with problem and compulsive gamblers, or one can use estimates available in the literature. The first option is likely to result in more accurate estimates, but it is also costly in terms of time and money. The second option, to use second-hand estimates, presents problems as well. Most of the studies available in the literature on the social costs associated with compulsive gambling are based on small samples. See Thompson, Gazel, and Rickman (1996a) for a review of studies in the literature and their own estimates of social costs of compulsive gambling in Wisconsin.

In summary, the costs associated with gambling addiction can be very substantial depending on the number of additional problem or compulsive gamblers due to the casino and the estimated annual social costs per problem gambler or compulsive gambler.

CONCLUSION

There is a lack of comprehensive studies in the literature dealing with the economic (monetary) impacts of casino gambling at the state and the substate levels. This article has provided the reader with a list of potential positive and negative factors that must be included in such economic impact studies.

Some conclusions can be drawn from the discussion carried out in this article. One of the most important is that, with a few exceptions, many state and local economies in the United States have, most likely, experienced net monetary losses due to casino gambling in their jurisdictions. One of the major reasons for such negative impacts is the strategy of the monopolistic or oligopolistic market structure chosen by the new jurisdictions. These market structures resulted in low ratios of nonlocal to total visitors and high ratios of casino profits to total revenues.

Policymakers and other citizens in jurisdictions considering casinos as a future economic activity must be careful in choosing the type of market structure they adopt. It is better to concentrate casinos in one specific area, creating competition between them (forcing them to attract outside gamblers), than to establish several local monopolies. Politicians should also examine the negative side associated with casino gambling and not focus only on the positive side of job creation and increased tax revenues. Negative externalities are a reality even if precise estimates of their monetary costs are not yet available. Further research is needed for a more complete and balanced view of this industry at the national and subnational levels.

Notes

1. Since New Hampshire established the first government-run lottery in 1963, 37 states and the District of Columbia have also approved lotteries. Collectively they win $13 billion away from players. Pari-mutuel gaming (betting on horse races, dog races, and jai alai games) is now permitted in some form in over 40 states. Forty-six states allow charitable bingo (Thompson 1994).

2. Foxwoods in Connecticut is owned by the Mashantucket-Pequot Tribe. It is considered the largest casino in the United States in terms of revenues. Most Indian casinos, however, win much less due to the marketing disadvantage of being in remote locations. Indian casinos

may be found in 20 states. For statistics, see Thompson (1994) and Christiansen and Cummings (1997).

3. A specific multiplier for casino activities is not available in the literature. Therefore, a researcher must separate a casino's direct expenditures by type (wages and salaries, supplies, construction, and so forth) and then apply known multipliers to each of these types of economic activity to estimate the indirect impacts.

4. The Commission for the Study of National Policy on Gambling in 1975 identified the incidence of compulsive gambling as 0.7 percent of the general adult population. Some scholars use this incidence rate as a baseline for the number of problem gamblers in a society without casinos. Many studies suggest that the incidence of problem gambling increases to as much as 2-3 percent in the presence of casinos. A study of Iowa showed an increase to 1.4 percent of the adult population after the establishment of casinos in the state. On the higher side, a study in the province of Alberta, where slot machines are widely available, suggests an incidence rate over 5 percent. For these and other studies, see Thompson, Gazel, and Rickman (1996a).

5. Occasional gamblers are those who gamble to "kill time," as an entertainment activity. In other words, they are not problem or compulsive gamblers.

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