

THE REGIONAL ECONOMIC IMPACTS OF CASINO GAMBLING:
ASSESSMENT OF THE LITERATURE AND ESTABLISHMENT OF A RESEARCH AGENDA

by

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	i
I. INTRODUCTION	1
A. Purpose	1
B. Background	2
II. SCOPE AND ESSENCE OF CASINO IMPACTS	3
III. METHODOLOGICAL APPROACHES	6
IV. OVERVIEW OF IMPACT STUDIES	8
V. META-ANALYSIS	10
VI. SUMMARY OF FINDINGS	12
VII. SUGGESTIONS FOR FUTURE RESEARCH	20
A. Guidelines for Future Studies	20
B. Agenda for Future Research	20
VIII. CONCLUSION	22
REFERENCES	25

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EXECUTIVE SUMMARY

This report was sponsored by the National Gambling Impact Study Commission to assess the many studies on the economic impacts of casino gambling/gaming. This assessment includes: a) an itemization of many considerations affecting economic impacts, b) an evaluation of formal impact analysis modeling approaches, c) a detailed review of important features of 36 major studies, d) a meta-analysis of causal determinants, e) a point-by-point summary of findings, f) a set of guidelines for future studies, and g) a research agenda to close the knowledge gap.

Economic theory and the preponderance of evidence indicate that the aggregate direct and indirect impacts of the construction, operation, and taxation of casinos are significantly positive. Broader economic costs relating to such factors as the use of government services and changes in property values are not insignificant, but they do not come close to canceling out the more conventional output, income, and employment gains. Moreover, these broader negative impacts might be offset by some longer-term positive impacts stemming from increased spending of tax revenue on education, infrastructure, and redevelopment. This assessment does not factor in social costs of gambling, which are beyond the scope of this study, but warrant careful examination.

This report answers the following questions:

1. Is a casino more like a factory or a restaurant? This analogy refers to the fact that a factory typically brings in revenue from the outside and is thus able to spur economic growth, while a restaurant typically serves only residents and primarily recirculates money already in the region. The key issue is whether a casino serves an external market, and thus the answer hinges not so much on the inherent nature of the industry but on characteristics of individual facilities.
 - a. How large is the spending substitution effect of casino gambling resident patrons onsite? This refers to the extent to which casino patrons simply decrease their spending on other goods and services. While there are claims that this substitution can be 100% or more, there are few empirical studies to support such a conclusion, and these pertain only to “convenience gambling” operations, i.e., casinos that cater primarily to local residents. Some studies, however, have found that the substitution effect is much lower even for this type of operation, and that it ranged from 35% to 75% for casinos that serve a mix of tourists and residents.
 - b. How large is the substitution effect with respect to other gambling activities? The evidence varies widely and is difficult to verify. The preponderance of evidence, however, indicates a low substitution effect, except for charitable gaming.

2. How large are short-run multiplier effects of casino gambling? Multiplier effects refer to indirect and induced spending from the remainder of an economy. This economic backdrop is the same whether a casino or a new auto parts plant is placed in its midst, though initial linkages vary between the two. There are some rules of thumb on multiplier effects: small cities or groups of rural counties are not likely to have multipliers exceeding 1.5, medium-size to large cities multipliers would not exceed 2.0, and very large cities or state multipliers would not exceed 2.5.
3. How large are recapture effects? The ability of a new casino to keep its customers from venturing to casinos elsewhere depends on a host of factors, but primarily casino characteristics and location. Casinos are best able to compete with alternatives to which they are superior in terms of size, gaming choices, amenities, and image, and their advantage increases the farther they are separated geographically.
4. How significant is the market saturation effect?
 - a. To what extent is this the long-term aspect of the recapture rate? Serious analysts project that gambling in the U.S. can grow by another 10+% over the next decade before the market is saturated, and others have statistically measured the income elasticity of demand for gambling at 1.5, i.e., people's spending on gambling goes up 1.5% for every 1% increase in their income on average.
 - b. To what extent does saturation affect the substitution rate? Saturation could lead to a situation of convenience gambling everywhere and could lead to a worst case scenario for those counting on significant impacts. Chances of this happening are remote given institutional obstacles, public attitudes in some areas, and the market's ability to foresee the downside of such an arrangement.
 - c. To what extent are casino failures a problem? To most economists, the startup and failure of business is an inherent part of a market system. It is actually considered a healthy sign, and the problematic aspects may be more of a distributional (equity) rather than an aggregate (efficiency) issue.
5. Are there broader economic effects that should be considered?
 - a. What are the broader short-term negative impacts? The main negative impacts include the drain on public services, such as sewers and road maintenance, and the costs of increased crime and crime prevention in casino neighborhoods and even in adjacent communities. Overall negative impacts are related to the economic carrying capacity of the region relative to the size of the new casino.
 - b. What are the broader short-term positive economic impacts? Casino gambling expands the range of individual choice in recreational and entertainment opportunities.
 - c. Are there longer-term economic impacts? No one has documented longer-term negative economic impacts of sustained casino operation, and Las Vegas and Atlantic City are testaments to generally positive outcomes. Given the long-run payoffs of relatively high investment in education, infrastructure, and redevelopment of casino operations versus a comparably sized factory (due to government spending of relatively higher taxes), there is every indication that the long-run economic impacts will be positive even in smaller communities.

6. What kind of jobs do casinos provide? The majority of jobs are relatively low-skilled, low-paying service types (though there is evidence that tips swing the balance to higher than average pay for some occupational groups). However, unionized casino workers are ten times more likely than the national average to have their health coverage paid in full and have pensions that exceed the national average. Casino jobs have been an excellent “welfare to work” example. Finally, casino jobs are the only immediate employment opportunity in some areas, especially the rural South, inner-cities, and Indian Reservations.
7. What are the impacts of casinos on the size distribution of personal income? Not a single study to date has come close to providing a convincing answer to this question, but some insight can be applied from related questions and anecdotal evidence. If casinos offer jobs that would not otherwise be available, they reduce overall income inequality. This is offset somewhat by below average wages. High profits, which usually only go to a small number of individuals, raise income inequality, but, ironically, there is no effect on the host region’s income distribution if the vast majority of profits go to owners living elsewhere (which is often the case except for Indian gaming). Other determinants of the outcome pertain to who gambles and who pays the taxes (which differs on a case basis), as well as who receives the benefits from the public services the taxes support (generally the disadvantaged).
8. What are the racial/ethnic distributional implications of casino gambling? Employment studies indicate good records in minority hiring, as well as the hiring of women. However, racial/ethnic minorities, with the exception of Native Americans, are not as likely to be sharing in the profits. In addition, a conclusion similar to that of the previous question pertains to the distributional implications of gambling losses and other expenditures by patrons along racial/ethnic lines.
9. What are the tax implications of casino gambling? Casinos are subject to higher levels of taxation than are other enterprises in most locations.
 - a. Do gambling taxes pay for the government expenditures needed to support them? They typically more than pay for normal expenditures on roads, police, and fire protection (though it is beyond the scope of the study to consider aspects of broader social costs associated with gambling addiction, etc.). They have not immediately always paid for “boomtown effects,” but this can be remedied by better government planning.
 - b. Are some communities overly dependent on casino tax revenues? If casino gambling is viable in a community on a long-term basis, there is no difference from a fiscal standpoint in being a casino “company town” or an auto-manufacturing “company town.” Some casino towns have in fact diversified, though most have not.
 - c. What are the interjurisdictional ramifications of casino gambling? This appears to be an increasing problem, though it too will probably be limited by the market. Fierce competition can have the ramification of decreasing profits and causing an inordinate number of business failures (and the associated social costs to communities). Many jurisdictions have worked aggressively with casino interests to get in on the boom in order to attract tourists or recapture their residents.
10. What are the social costs of casino gambling? The major social concern with economic consequences is compulsive gambling. However, it is beyond the scope of the study to evaluate all the ramifications of this question.

11. What effect do government regulations have on casino gambling? It is well established that taxing an economic enterprise raises its costs of doing business and causes it to be smaller than it otherwise would be. In addition, regulation of operations usually adds costs and constrains size as well. Casinos also benefit from government involvement, in addition to the obvious major gain of monopoly status. Some regulations help maintain financial stability of casinos and help convey the image of honest games of chance, even if not statistically fair games. Many local governments and casinos appear to work reasonably well together to contribute to the economic base of their community. The impacts of casino gambling are not a passive phenomenon and can be significantly modified by government (as well as by industry practices).
12. Are there dynamic aspects of the issue that will make future impacts of casino gambling different from those of the past? Multiplier impacts will increase in established casino communities, as more specialized support industries enter the region (thus decreasing imports, which cause multiplier leakages). As casinos proliferate, the recapture effect at any one location will increase. However, likely to offset this substantially is the fact that proliferation will increase the substitution effect because it will be harder for any location to attract tourists, other things being equal. On net, we can probably expect impacts to be somewhat smaller for new casino communities in the future if the national rate of casino growth exceeds a market equilibrium growth rate.

Robert Goodman in his U.S. Gambling Study Report found nearly all of the 16 major studies he reviewed to be biased in favor of gambling. I found the majority of the more than 100 studies I examined to have biases, most in favor, some opposed. In many cases, the biases were intentional, as were the omission of key considerations, while other biases arose from the narrow scope of the study, absence of data, mechanical application of simple models, or lack of sophistication on the part of the analysts.

To what should we attribute the difference in the findings presented here and those of earlier assessments of the literature? One explanation is that this study has been undertaken four years later, and the state-of-the-art of casino impact analysis has improved. To a greater extent, this is not so much a matter of invoking more sophisticated models but because analysts now realize that, to be taken seriously, they have to address the substitution effect, the recapture effect, and market saturation issues (though these are not always done properly). Several analysts also take note of social costs and attempt to quantify them (though they often do not actually integrate the numbers into their bottom line). Another explanation is that prior assessments relied very heavily on anecdotal evidence and upper bound estimates of social costs in drawing his conclusions.

A sufficient number of properly done studies, as well as adjustments in the findings of some flawed studies, enable me to state the conclusion: a new casino, of even limited attractiveness and placed in a market that is not already saturated, will yield positive economic benefits on net to its host economy. It should, of course, be added that it appears that most markets are not yet saturated. Also, this does not mean that every casino project has lived up to expectations, but the same can be said of many individual projects in general, as well as of broader redevelopment plans. This conclusion does not factor in the social costs of problem gambling or crime as well. In essence, however, several researchers have correctly noted that analyzing the impact of a new casino is not so much different than analyzing the impact of a new retail center or entertainment complex in a region, social cost considerations aside.

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I. INTRODUCTION

Legalized gambling/gaming has become a prominent economic and social issue. It has been characterized as the “most significant phenomenon affecting the tourist industry of this country,” and readily able to change a community’s business climate (Dimanche and Speyrer, 1996). While some emphasize that gambling is highly profitable, others have pointed out that, at the same time, it represents “a highly regressive industrial policy” (Goodman, 1995), or “a repeated failure of national urban policy” (Perniciario, 1995). Still others have stated that its “reputation as a panacea for prosperity is exaggerated” (Jinkner-Lloyd, 1996).

A. Purpose

Many studies have been completed on the economic impacts of casino gambling. Most have been sponsored by promotional or opposition groups, while some have been produced by more neutral government agencies or by independent researchers. The studies differ in scope, method of analysis, and underlying, often biasing, assumptions. Their conclusions vary widely, and it is not surprising that the literature has generated much heat in addition to light on the issue.

The primary purpose of this report is to perform an assessment of the studies on the economic impacts of casino gambling/gaming. This assessment includes: an itemization of the many considerations affecting economic impacts, an evaluation of alternative approaches to impact analysis, a detailed review of important features of 36 major studies, a meta-analysis of causal determinants, and a point-by-point summary of findings. The analysis of what we know and what we don’t know is then used to provide guidelines for the performance of future studies and to specify a future research agenda, including the testing of appropriate hypotheses, delineation of the proper scope of analysis, determination of appropriate analytical methods, and utilization of appropriate assumptions.

In the course of the analysis, I have read over 100 books, peer reviewed journal articles, trade publications, consulting reports, government studies, position papers, and newspaper stories. About half of these were provided by the NGISC, and the other half were found through computerized and informal literature searches.

The study focuses on the local, regional, and national economic impacts of the construction, operation, and taxation of casinos. This includes both direct and higher-order effects of economic interdependence, the latter pertaining to the indirect interindustry stimulus of demand for goods and services, as well as the demand induced by household income payments and by government spending of tax revenues. It also includes general equilibrium effects acting through markets and prices. Finally, to

some extent, it addresses the even broader issues of market expansion and changes in business environment, as well as negative externalities such as the costs of crime and congestion. These impacts are examined both in terms of aggregate measures of output (sales), income, and employment, as well as distributional impacts across sectors, socioeconomic groups, and geographic locations.

The study also focuses on key but controversial determinants, such as the extent to which spending on casino gambling simply displaces or cannibalizes other economic activity, the extent to which casinos recapture or retain spending that might otherwise have leaked out of the region, and the prospects of market saturation that could lead to wasted investment.

B. Background

In the middle of the vast western desert lies Las Vegas, Nevada, one of the fastest growing cities in the U.S., with a current population well over one million. Nowhere on the 700 mile stretch of I-15 between the extended Los Angeles and Salt Lake City metropolitan areas is there a city of more than 50,000. Neither Las Vegas' traditional role as a stopover point along the highway nor its proximity to Hoover Dam and Lake Mead can explain more than a fraction of its economic success. It is almost a universally accepted truth that Las Vegas' population and economic vitality are due to gambling initially and then to its broadening to a multipurpose (even family-oriented) tourist/entertainment complex. One can quickly calculate the direct output, income, and employment in casinos and reliably ascribe nearly all the rest of the economic activity of Las Vegas to short-term and long-term stimulating effects, thereby arriving at a staggering multiplier value. The question is, of course, how representative of casino towns is Las Vegas, or relatedly, how many Las Vegas-type situations are economically viable in the U.S?

Nestled in a beautifully wooded and slightly hilly area of Connecticut just off I-95 and just south of the Rhode Island border is the Foxwoods Casino Resort, owned by the Mashantucket Pequot Native American Tribe. The operation sports the largest casino in the U.S. and in 1997 generated approximately one billion dollars in annual revenues from nearly 20 million annual visitors. The majestic facility, which now includes a 17-story luxury hotel tower that rivals many of the grander facilities in Las Vegas in the 1970s, is, however, a low profile operation. Unlike the neon constellation of Las Vegas, Foxwoods is not visible from any distance and the road signs leading to it do not even spell out its name but simply depict a small brown fox and a few trees. Still, the enterprise makes a special effort to hire locals and generates sizable multiplier effects on the surrounding State. One aspect of this association is that the State receives one-third of the slot-machine revenue in exchange for the Tribe's original exclusive franchise to operate the casino (a second casino has since been operated successfully by the Mohegan Tribe under an identical arrangement with the State of Connecticut). Foxwoods is by far the most successful of Native American casinos. Again, the question is whether some casino promoters are realistic about suggesting there will be additional successes such as this.

Of course not all casino locations are successful. California has 19 Native American casinos, some of which are no more than spartan bingo halls with a few slot machines. They generate very little revenue, only trivial multiplier effects, and provide little more than meager recreation for those already on the reservation.

In the middle of the downtown hotel district in New Orleans is a partially completed large circular building that was to house the largest casino in the U.S. Due to government and investor wrangling, however, the project, begun in 1994, put on hold in late 1995 and only recently being revived, stands as a white elephant adjacent to the renowned French Quarter. Skeptics note that the casino may not be highly successful in any case, since most people come to New Orleans for other purposes. They also point out that the small riverboat operations in the City and even larger operations in neighboring Shreveport and Biloxi are not overcrowded.

Casino failures that question the viability of future proliferation or that may generate negative multiplier effects are becoming more prevalent—witness the bankruptcy of the Trump Taj Mahal in Atlantic City, the closing of several small casinos following the initial boom in Deadwood, the movement of two Iowa riverboat casinos downstream to more promising locations on the lower Mississippi once Missouri opened its casinos, and the closing of some Native American Casinos in the upper mid-West. The question is whether we have reached saturation or whether such examples are

typical of a free market, where the rise and demise of enterprises is commonplace, and, to many economists, considered a healthy sign of the sorting out of the marketplace.

II. THE SCOPE AND ESSENCE OF CASINO IMPACTS

If an entrepreneur sought to open a clothing store in an existing building in an established commercial district, he/she could readily proceed without interference. The decision is purely a private one. However, those wishing to open a casino face a number of obstacles, including explicit legal restrictions, public concern about the morality of gambling itself, or potential social and economic costs that extend beyond the private enterprise and that have put the casino operator on the defensive. A burden of proof requirement now exists about whether a casino will be good for the community. Thus it has become standard practice for operators to present statistics on the numbers of jobs and income created on site, and a natural extension to emphasize that these direct effects cause a chain reaction of increased economic activity throughout the host region. The sum total of these indirect jobs and income is some multiple of the direct effects, hence, the oft used term multiplier effects.¹

Impact analysis is an established field in the social sciences, which consists of methods to estimate these broader impacts and the application of these methods to a broad range of issues.² An informal set of standards and practices exist among professionals in this field, but accuracy is often compromised by the complexity of various issues, lack of data, imperfect models, biasing assumptions, and outright abuse. Classic examples are the use of inflated multipliers or the presentation of only positive or negative effects.

Is the economic impact of a casino different from that of any other enterprise in a region? The answer is yes—casino impacts are broader and more complicated. At the same time, methods exist to determine them accurately if applied correctly.

The situation is best typified by an elaboration of a dichotomy offered by Goodman (1994), Grinols (1995), and others between a factory and a restaurant. The factory typically purchases some goods and services locally, hires a number of local workers, and produces profits for its owners often implicitly assumed to be local as well. Its product is usually exported from the region, thereby bringing in new dollars. The factory is characterized as a basic industry (i.e., adding to the export base) or as an “engine of growth” that generates multiplier effects. As we will show in the following section, for this case, impact analysis is very straightforward and the simplest models will suffice.

On the other hand, a restaurant purchases goods and services locally, hires local workers, and makes a profit, but a major difference is that it serves mainly local customers. This means new money may not flow into the region, but rather there is simply a redistribution (substitution) of consumer spending from existing goods and services. Thus any direct and indirect gains to and stemming from the new restaurant are offset by losses to other enterprises in the area.

Before we conclude whether a casino is more like a factory or a restaurant, we broaden the simplistic dichotomy, as well as broadening the impact analysis in general. In the more general context, the following should be considered:

- The construction of the facility also generates direct and indirect impacts.
- The taxes paid by the facility generate direct and indirect impacts, as do taxes paid by those indirectly affected.
- Those previously unemployed or on welfare are removed from government transfer rolls, which can lead to other types of government spending or a reduction in taxes.

- Property values may rise if the facility is a desirable one or may fall if it is not.
- Pollution and congestion may arise, which impose costs off-site (social costs).
- The facility may lead to improvements in productivity in particular enterprises (e.g., through sharing of new infrastructure) or improve the business climate in general.

For the case of tourist/entertainment operations, such as casinos, considerations include:

- Consumer spending substitution may not necessarily be one-for-one; it may increase recreational activity and local consumer spending overall.
- Even if total spending is the same, there may be different multiplier effects, i.e., some businesses may have the potential to generate higher multipliers than others.³
- The facility may have the ability to attract visitors from outside the area.
- The facility may be able to recapture spending by local residents who had previously traveled outside the region for that purpose.
- Gambling addiction may place a drain on the economy through lost work time or medical treatment costs.
- Various social ills associated with gambling may arise (crime, prostitution, etc.).

Other considerations relate to long-term impacts:

- A more secular stimulus to economic growth may arise from the diversification of an economy once it is back on its feet or exceeds some critical mass.
- Sustainability of the enterprise with respect to the market area may be tenuous because of potential competition within the region, from outside, or from market saturation in general.
- Public spending on education, infrastructure, and redevelopment made possible through tax revenues may spur widespread economic growth.

In addition to the aggregate measures, policy-makers are increasingly concerned with the distribution of impacts:

- How the gains and losses are spread among income classes.
- Whether the new jobs created are high-skilled, high-paying, or the opposite.
- How the gains and losses are spread among racial/ethnic groups.

- How the gains are distributed across economic sectors.
- How the gains are distributed across neighborhoods and municipalities.
- The extent to which the profits from the casinos are retained (and reinvested) in the region versus flowing to absentee owners (including being skimmed to avoid taxation).
- How the tax revenues are spent among competing demands.

Also worthy of study are the following intangibles:

- Do casinos lead to a moral laxness in the community?
- Is gambling time spent on an unproductive activity?
- Economists usually consider any measure that widens peoples' choices beneficial for that reason alone, but how can this be measured?
- Does experience dealing with risk and uncertainty on a quantitative basis help people make better decisions in other realms of their lives?

Over time, analysts have become conscious of an increasing number of these factors. More of them have been incorporated in the studies in recent years (see, e.g., Thompson et al., 1995; Leven and Phares, 1997). What is important, however, is not just the conceptual inclusion of the factors but the collection of data that enables us to make credible estimates for individual cases and important generalizations. Some of these will be discussed below, though a more comprehensive discussion can be found in the following section.

Does a large number of possibly offsetting factors enable us to say anything definitive about whether casinos are more like factories or restaurants? First, casinos are not monolithic entities; they may include only a few slot machines and blackjack tables in a ramshackle building to as many as thousands of slot machines and hundreds of tables in a large entertainment/resort hotel in a large city. Most casinos fall somewhere in between these extremes, as do the range of impacts fall somewhere between zero (or even negative) to wildly positive. For example, some surveys of casino patrons indicate that they consist of as high a proportion as 80% tourists, or that they have a recapture rate as high as 50%. The socioeconomic profile for larger, more attractive enterprises is that of better educated and higher income customers. On the other hand, smaller, less elaborate operations are in the category of "convenience" casinos, as opposed to tourist draws, and simply recirculate local dollars primarily from customers that are most prevalently minorities with low incomes.

The factors that affect the outcome are not surprising in many cases, including size, cost of gambling, accessibility, general amenities, and extent of competition. Moreover, these factors can be affected by decisions with respect to pricing, taxation/regulation, advertising, and coordination.

In a similar vein, there is controversy over the size of multipliers, which can range from very low (close to 1.0 or even less) to rather large (on the order of 2.5 or more), exclusive of displacement, recapture, externality, or long-term effects. These are most influenced by the size of the region and its

economic interdependence, the extent to which workers are residents or commuters, the extent of absentee ownership, and the manner in which tax dollars are spent. Again, these can be affected by decision-makers through special efforts to draw from local labor pools, buy from local suppliers, and reinvest in the region voluntarily, through government mandate or through earmarked taxes.

III. METHODOLOGICAL APPROACHES

Economists have developed several methodologies for performing overall impact analyses of businesses such as casinos, as well as for estimating key component relations (e.g., substitution effects) and for testing hypotheses (overall causal connections between gambling and economic growth). The most widely used tool of regional economic impact analysis in the U.S. is *input-output* (I-O) economics. In its most basic form, I-O is a static linear model of all purchases and sales between sectors of an economy, based on the material requirements of production. Advances in I-O have rendered it capable of being a dynamic, nonlinear model of market and nonmarket transactions between sectors and economies, based on technological relations of production and other quantifiable variables (Miller and Blair, 1985; Rose and Miernyk, 1989). However, the more general formulation is expensive and unwieldy, and is thus rarely applied to gambling impacts or impact analyses in general.

I-O models emphasize economic interdependence and are readily able to calculate multipliers for delineations as fine as 550 economic sectors (e.g., corresponding to the Standard Industrial Classification system). A special case of an I-O is the *economic base model*, which consists of 2-sector grouping of basic (export) and nonbasic (local support) industries; only the basic sector grouping is capable of bringing in dollars from the outside and thereby generating multiplier effects.

The main reasons I-O models are so widely used is their low cost and general availability. The Minnesota IMPLAN group offers I-O tables for any county grouping or individual states for less than \$1,000, and, until recently, the U.S. Department of Commerce offered tables for substantially less. Moreover, a shortcut procedure makes the use of the I-O approach even more facile—this involves the direct application of multipliers to the problem at hand.

Another major approach is a *regional econometric model*. This is a set of simultaneous equations representing major components of an economy, statistically estimated and capable of yielding forecasts as well as performing impact analyses. Econometric models often lack the sectoral detail of I-O models, but usually have a stronger empirical base and provide a greater role for prices (including wage rates and interest rates). Some econometric models are conjoined with an I-O model or use I-O table data to enhance sectoral delineation (see, e.g., Treyz, 1993; Hewings et al., 1996). Econometric models are typically more expensive than I-O, which limits their use. For example, Regional Economic Models, Inc. (REMI) sells models for states or county groupings for \$40,000 to \$50,000.

Econometric analysis does, however, have several other uses in gambling impact studies. One is the use of standard *multiple regression analysis* to estimate the relationships between key variables, e.g., the extent to which a person's spending on gambling goes up as his/her income rises (the income elasticity of demand). Another example is the use of *cointegration* to test causation between casino revenues and economic growth in large (see, e.g., Walker and Jackson, 1995). Still another is the use of multiple regression to undertake a *meta-analysis* (formal statistical synthesis of study findings), as will be presented in Section V of this report.

A relatively new methodology that has not been used yet for gambling impacts, but that has great potential, is *computable general equilibrium* (CGE) analysis. CGE is a model of the entire economy based on decisions by individual producers and consumers in response to price signals, within limits of available capital, labor, and natural resources (Shoven and Whalley, 1993). It utilizes some of the best features of I-O, such as the transactions table to enhance the sectoral delineation of the database, while overcoming many of its limitations, such as linearity, lack of explicit role for pricing, and absence of resource constraints (see, e.g., Rose, 1996). In addition, equations can be econometrically estimated

(e.g., using time series data), though they are usually not, and are just simply calibrated by single year values. There are no packaged CGE models for specific regions, and expertise in this approach is not widespread, thus inhibiting its application to gambling impact studies thus far.

Another major approach is the *gravity model*, which has more specialized use to determine potential markets for gambling, and thus would be especially adept at yielding insights to the saturation issue. A gravity model measures the potential of each source of attraction in terms of mass and distance measure (see e.g., Hoover and Giarratani, 1984). Several other types of marketing models are also applicable, especially those that can evaluate market potential or delineate the optimal geographic configurations of competitors.

All of the models noted have general strengths and limitations. I-O models tend to have an upside bias because they do not factor in any spending substitution effect unless it is explicitly incorporated, and because they provide an unlimited supply response (at constant prices) to any demand increase. Regional econometric models include various supply constraints (to some extent spending substitution is automatic once the local vs. tourist mix is specified) and allow a greater role for prices. Still, they represent extrapolation of past behavior and have limitations in evaluating the impacts of new and large forms of economic activity and in making fine sectoral delineations, though they are often based on more primary and location-specific data than the other approaches. Computable general equilibrium models are as adept at incorporating substitution effects as economy-wide econometric models, but may sometimes be overly constrained. They are by far best of any of the models in reflecting behavioral responses. Gravity models are limited to measuring market areas, recapture effects, and some direct consumer and producer expenditures. Of course, cost considerations cannot be ignored, and it is sobering that econometric and CGE models cost 25 to 50 times as much as I-O models for comparable regions.

Beyond explaining some of the strengths and limitations of major modeling approaches, this is not the place to go into an exhaustive treatment of their relative merits in general. One thing to note, however, is that no one modeling approach is superior to all others in all respects. More sophisticated models may be overkill for some purposes, and one must always be cognizant of the pragmatic balance between cost and pinpoint accuracy for individual sites. At the same time, some definitive analyses are needed to test specific and general propositions about gambling impacts, and the best available model should be used for this purpose (as we discuss in greater detail in Section VI).

Of course, informal methods are useful to gambling impact assessment, especially in interpreting numbers and getting a feel for the big picture. One cannot ignore the importance of data collection efforts, especially surveys and interviews in getting at some of the more controversial aspects of the issue, such as substitution, recapture, and saturation effects.

Actually, the key to accurate impact assessment is more a matter of whether a model is used properly than of the model form. It is not unusual for multipliers to be applied to the wrong base, for models estimated over a narrow range of values to be used to assess very large changes, or for it to be suggested that all economic growth over a period can be ascribed to one direct stimulus. It is also often the case for analysts to fail to apply multipliers to activities that generate additional higher-order effects (e.g., construction and taxes). Most distressing is the explicit or implicit omission of key considerations, most prominently the failure to subtract the substitution effect or to add the recapture effect.

Finally, all study findings thus far should be taken with a grain of salt. Despite the smugness of many, no single study has been truly comprehensive and definitive. More empirical research and

improvements in modeling approaches are needed to narrow its range of estimates, including the testing of hypotheses on major causal determinants and the incorporation of broader economic impacts, such as addictive behavior costs and improved risk-taking capability benefits.

IV. OVERVIEW OF IMPACT STUDIES

A sample of 36 of the more than 100 studies reviewed are summarized in Table 1, according to major characteristics of methodology, data, findings, and authorship. The studies are intended to be representative, but are also weighted heavily toward those with quantitative estimates of direct and indirect effects (for use in a formal meta-analysis in the following section).

The studies also include those for actual as well as proposed sites. All major categories of casinos are included: land-based, large and small, riverboat, and Native American. Impact areas include counties, county groups, states, and the entire U.S. The most prevalent method of analysis is I-O economics, or multipliers derived from I-O models (primarily using IMPLAN or U.S. Department of Commerce RIMS II). Several studies also used an econometric model (primarily REMI). Very few of the studies in Table 1 used gravity models and none utilized CGE models. Several used more informal analyses of data, and some were primarily just data tabulations that drew selective inferences. Most studies relied on a combination of primary (e.g., tax records) and secondary data (e.g., regional unemployment statistics) from government and industry. Several were based on their own surveys or interviews.

Nearly all of the studies measured some major indicator of aggregate economic activity: output, employment, income, or tax revenues. Most measured both direct and indirect impacts.⁴ Even those that presented direct impacts of taxes, for the most part, did not measure indirect effects.⁵ Distributional impact analyses were only half as prevalent as aggregate analyses. The sectoral distribution was the most often studied and income and racial impact distribution were the least. Also, the distributional analyses were much less likely to measure indirect effects.

Offset effects were measured in only about half the studies. These include substitution effects, saturation effects, social costs, and broader economic effects (e.g., public expenditures on crime prevention or longer-term benefits of infrastructure and education spending). Even where measured, the tendency was not to quantify or to integrate them into overall numerical findings.

A few of the studies actually analyzed the effects of government involvement in the form of granting monopolies (which raises direct casino revenues), regulations (which lowers revenue), or subsidies/taxes (which lower/raise revenue). Most of the studies contained biasing assumptions or serious omissions. The most prevalent was the absence of negative impacts from external economic costs or substitution effects. Even more studies omitted positive contributions of economic recapture effects (though, as we will note below, these positive effects are likely to be lower than the negative ones). Several of the studies used inflated or approximated multipliers. Several contained an implicit bias—they were obviously company public relations, or undertaken or sponsored by industry groups or economic development offices. Several studies contained special features including proprietary data, surveys, supplementary analyses of property values, market analyses of competition, or recapture effects.

Findings yield a broad range of results with respect to overall impacts of casino gambling. (Where a range of estimates are presented for various sizes or over a period of years for any single location, we usually took the mid-point or average figures.) Several studies are especially useful because they contain an empirical assessment of the influence of major determining factors, such as substitution effects, recapture effects, or the profile of casino patrons.

Finally, an attempt is made to evaluate the reliability of the studies based on such factors as methodology, data, causal factors, assumptions, omissions, bias, researcher credentials of affiliation, and

sponsorship. This is, of course, a very difficult and admittedly imperfect exercise, and my own bias gave the most weight in this assessment to methodology, assumptions, omissions, bias, and sponsorship, in descending order.⁶

The results pertaining to aggregate impacts are summarized in Table 1B, in which they are grouped into four categories of impact size and direction. The presentation at this point is intended to be illustrative of impact studies. It should be emphasized that just because the majority of studies find significantly or highly positive impacts does not by itself mean that these are the more accurate or that they can be generalized for all sites. An analysis of the results, including an assessment of study quality, is needed before such conclusions can be reached. However, one is immediately struck by the influence of offset effects and multiplier size. Those studies finding overall negative or neutral impacts cite high substitution effects or social costs. Those studies with significantly positive impacts typically omit negative effects (both substitution effects and social costs). Those that are highly positive also typically utilize high multipliers.

Some curiosities do arise. For example, the Arthur Anderson/University of Baltimore Study finds high substitution effects and small recapture effects, yet overall yields the largest output and income gains of any of the three Maryland proposed gambling site studies. This appears to be due to the fact the study assumes the largest development scenario (alternatively, the Maryland Department of Fiscal Services Report assumes the smallest).

Background conditions also explain some of the findings. For example, the Connecticut economy has been rather stagnant for many years, and it is not unreasonable to characterize gambling as an engine for economic growth in that State. The same can be said for several Mississippi River communities and, somewhat more controversially, for Atlantic City some time ago.

Other important findings at this point are summarized in Table 1C. As indicated, less than one-third of the studies provided solid evidence of key determinants of gambling impacts. Here the substitution effect, for example, is found to be as small as 35% and as large as 83%.⁷ Recapture effects range from 25% to 50%.

In some cases, patrons are representative of the general population, while in other cases there is a relatively high proportion of retired, poor, and minority. Overall, there are few surprises here. Substitution rates are low where there is a large tourist influx (still compare the striking contrast between the two Maryland studies). Also, patrons tend to be relatively less well to do, less well educated, and have greater minority representation in depressed economic areas without tourist inflows. These generalizations can be used to check empirical findings or to specify assumptions and save the cost of surveys and interviews in the future.

The tax implications of casinos can be inferred from the information on types and rates of taxation presented in Tables 1C. Variations exist across jurisdictions, but as a whole the taxes on casino operations are higher than those imposed on other enterprises. This burden limits the positive effects of even higher revenues, income, and employment, but initiates a chain of large and widespread impacts through the avenues of government spending.

V. META-ANALYSIS

To supplement the narrative and tabular reviews presented thus far, I undertook a *meta-analysis*, which is “the application of statistical procedures to collections of empirical findings from individual studies for the purpose of integrating, synthesizing, and making use of them” (Wolf, 1986; p. 5). In layman’s terms, this consists of placing the causal factors and results of separate studies into one large data pool and performing a statistical synthesis of it. The statistical technique is usually that of standard multiple regression analysis.

Meta-analysis has several advantages, including the fact that it is a formal method with statistical properties, helps guard against biased interpretations of results, helps isolate fundamental assumptions and causal determinants, and helps present findings more succinctly. At the same time, the technique has some potential problems, including selective inclusion, potential misleading interpretations of data, failure to examine broader characteristics of studies, and failure to consider moderating variables not included in them. There is also the tendency to consider all studies, no matter what their merits, to be on equal footing. The alternative is to weight the studies according to some quality scale, but this returns us to the realm of subjectivity. Still, the gains from this weighting procedure, if performed properly, will exceed the shortcomings, and it will be implemented in one of the tests below.

Overall, meta-analysis is best used to enhance a conventional literature assessment rather than as a substitute for it. The technique has received increasingly widespread use in the natural sciences and social sciences in recent years. No meta-analysis has been undertaken for gambling impacts per se, the closest analysis being that of Baaijens and Nijkamp (1997) in their study of tourism impacts. Van den Bergh and Button (1997) state that meta-analysis is appropriate when “characteristics and results in previous studies are similar, especially in terms of problems considered in methodological approaches.” The studies reviewed in this report meet these criteria.

A meta-analysis was performed on a subset of the 36 studies in Table 1. Essentially, the statistical runs regress Total Output impacts on the set of explanatory variables, presented in Table 2A, plus three additional background socioeconomic variables: population, unemployment rate, and per capita income differential between the region and the U.S. as a whole. Quantification of qualitative variables (see Table 2B) and adjustment of dollar values to a 1996 U.S. currency base is needed to standardize the analysis, with the results presented in the Meta-Analysis Coding Sheet (Appendix Table A).

Results of the meta-analysis are presented in Table 3. Note first that my scaling of the qualitative variables involved a number of judgement calls. The main source of arbitrariness involves variables that required more judgement, such as rating an extensive input-output modeling approach as superior to a simple econometric approach. Other arbitrariness arises in the linearity of scales in general and where actual figures were converted into scale numbers, such as the offset effect. To facilitate comparisons of the relative prominence of scaled variables, all of them were normalized (indexed) to a zero-one scale (see Appendix Table C).

The dependent variable in all three sets of regressions was Total Gross Output (equivalent to gross revenues or sales throughout the impacted economy). This was deemed superior to Total Income for two reasons: 1) the sample of studies reporting TGO impacts had a broader range of findings, including some very low impacts; and 2) output is probably more accurately measured than income (some of the studies used only wages and salaries, while others also used profits).

Note that Total Gross Output would equal Direct Output times the size of the impact multiplier in simple studies, so including multiplier size would over-determine the model. Of course, many studies contain offset effects, and, in some cases, subtract these from TGO. The resulting relationship could be considered a net multiplier effect. The Reliability measures simply indicate the bias in multipliers, and, to some extent, Offset size. Note also that Direct Output is probably a superior measure than casino size variables (floor space, number of tables, number of slots), because DO usually includes non-casino spending, which is significant component of impacts.⁸

The first set of runs regressed Total Gross Output on the explanatory variables: Total Direct Output, Casino Type (using dummy variables), Offset Effects (the combination of substitution and recapture effects), and a summary measure of Reliability (which is a judgement call on my part intended to encompass variables 3-8: Methodological Approach, Data Source, Author Credentials, etc.). Results are presented in column 1 of Table 3. The overall statistical fit is strong, as indicated by the adjusted multiple correlation coefficient (\bar{R}^2) of .960. The major explanatory variable is Direct Output, with a parameter value of 1.810, and is statistically significant at the 1.0% level. The DO parameter value means that for every \$1.00 increase in Direct Output, Total Gross Output in the impacted region rises by \$1.81. In effect, this is the pure multiplier value and is a reasonable result--most impact multipliers (before adjusting for offset effects, were in the range of 1.5 to 2.5). The other statistically significant variable (at the 5% level in this case) is the Offset Effect. The large parameter value of 2,561 to a great extent reflects our normalization procedure (zero-one range of values). The sign of the Offset Effect is positive because we have measured this variable on an inverse scale—huge negative values have the lowest index value of 1. Note also that my Reliability Summary variable is of the right sign but not statistically significant.⁹

The second set of runs regressed TGO on Direct Output, Casino Type, Offset Effects, and individual components of Reliability (variables 3-8). The latter is to test the worthiness of my Reliability Summary measure. The results are presented in Column 2 of Table 3. The overall statistical fit is even more strong for this specification than the previous one, with an \bar{R}^2 of .970, but only the Direct Output variable is statistically significant (the parameter estimate for DO is similar to that of Equation 1). However, the Casino Type dummy variables, Offset Effect and all of the Reliability Component variables are not statistically significant.¹⁰

A third set of runs regressed TGO on the previous variables but without the individual Reliability Component variables (V3-V8) or the Reliability Summary measure (V9). Reliability only enters in this set of regressions through a weighting procedure. In this case we used the Reliability Summary measure to weight the observations--a high reliability assessment of an individual study was given a weight of three, a medium assessment was given a weight of two, and a low assessment was given a weight of one. The weights were imposed by increasing the number of observations by the appropriate multiplicative factor (actually to handle gradations in-between such as medium-high, the weighting was 6:4:2). The results are presented in column 3 of Table 3. The third specification has an \bar{R}^2 of .961. The parameter value of DO was 1.878, and both the dummy variables for Casino Type were statistically significant. The Offset Effect variable is also statistically significant with a parameter value similar to that in Equation 1. Overall, the *t*-statistic of the variables are sizably higher than in Equations 1 and 2, so this appears to be the superior specification. This means that the weighting system for reliability yields better results than does my Reliability Summary measure or the individual Reliability Components. Note also that certain parameter values are robust with respect to the inclusion of the three reliability tests, especially that for DO and to a lesser extent for Offset Effects.

Overall, the meta-analysis yields some valuable results, though few are surprising. The DO coefficient reveals the multiplier value, and we find that land-based casinos have higher economic impacts than riverboat or Native American casinos. Also, healthy economic areas have larger regional economic impacts than do depressed ones. Offset Effects have a major influence on the results. Finally, higher quality studies yield lower economic impact estimates, but still within the range of significant positive impacts. The bottom-line here is that a meta-analysis can add some precision to the study, but in no way is a substitute for the other forms of analysis contained in this report.

VI. SUMMARY OF FINDINGS

Below, I have summarized some of the major arguments on key aspects of casino impacts. It is impossible to note every statement of fact or study conclusion, but an attempt has been made to offer a representative sample.

1. Is a casino more like a factory or a restaurant? As Leven and Phares (1998) point out, the key issue here is whether a casino serves an external market, and thus the answer hinges not so much on the inherent nature of the industry but on characteristics of individual facilities. Does the casino have features that will draw people from other venues, and even then will it be able to compete now and into the future with casinos elsewhere, as well as with other spending options?

a. How large is the spending substitution (displacement, cannibalization) effect of casino gambling patrons onsite? While there are claims that this can be 100% or more, there are no empirical studies to support such a conclusion. Perhaps the closest are the studies by Gazel et al. (1997) that 83% of Illinois riverboat patrons were residents and by the Minnesota Gaming Commission (1993) that 80% of the patrons of that State's Native American casinos were residents, or even Leven and Phares' (1998) estimate of a 75% substitution rate in Missouri casinos. At the other end of the spectrum are cases such as the KPMG (1995) Study, which indicated nearly 80% of the patrons of Windsor Casinos were tourists, or the Thompson et al. study (1995), which found only a 30% substitution rate (with respect to small local areas) for Wisconsin Indian gambling halls. Not surprisingly, Gazel et al. (1997) found that less than 15% of the patrons of Atlantic City and Las Vegas casinos were residents. Studies by Blois et al. (1995) and others have noted that casinos often undercut some local hospitality operations by subsidizing restaurants, bars, and lodging onsite. Still, this results in an increase in real disposable income, the positive effect of which should show up in various aspects of the local economy. Overall, the only case where the substitution effect might be negative is that of a casino disrupting an already healthy tourist base, such as in the concern expressed in the Florida (1995) study.

b. What is the spending substitution effect pertaining to tourists offsite? One of the most dramatic insights into this issue came from Steve Wynn, a major casino operator and promoter who, in addressing local businessmen in Bridgeport, Connecticut, stated that "There is no reason on earth for any of you to expect for more than a second that just because there are people here, they're going to run into your restaurants and stores just because we build this building [casino] here." Note this differs from question 1a, which refers to the substitution effect of the spending of local residents. Here we are referring to the matter of tourist or excursionist expenditures, and the issue is more a matter of the distribution (equity, or fairness considerations) of impacts than of the aggregate level of impacts (efficiency considerations).¹¹ For those tourists who would not be there if it were not for the casinos, it cannot be claimed that their spending was displaced. It is more a matter of local restaurants and other service providers not sharing as broadly in the direct gains. I am using the convention of considering direct spending by patrons (tourists or residents and whether onsite or offsite) as direct impacts. Still, there are multiplier effects of the direct expenditures, even if not made in the casino that can indirectly benefit the community. For example, tourists may not purchase gasoline at a service station 35 miles from the casino, but a casino employee living in that community might do so.¹²

c. How large is the substitution effect with respect to other gambling activities? The evidence varies widely and is difficult to verify. Thus, it is harder to draw conclusions here. Thalheimer (1992) estimated casino substitution effects for horse racing in Maryland at 25%, while RCF (1993), in a well-designed study, estimated only a 4% substitution effect for the Chicago area. I lean more to the latter study because of its thorough methodology and because of the uniqueness of horse racing,

including its feature of being an observational sport. Estimates of lottery spending displacement vary widely as well with studies by Ovedovitz (1992), Deloitte and Touche (1992), and Maryland Department of Fiscal Services (1995) indicating little or no substitution and Leven and Phares (1998) estimating a 25% displacement in Missouri. The preponderance of evidence is thus toward a low substitution effect. As to charitable gaming, most studies indicate a substantial substitution effect. However, many of the patrons are actually there for the charitable giving, and there is a strong likelihood that they make up their altruism in some other way.

2. How large are multiplier effects of casino gambling? Here we address merely the short-run impacts of various aspects.

a. How does this relate to the factories versus restaurant analogy? Some have claimed that the casino is less like the factory because it utilizes specialized equipment, with the implication that the equipment is then imported from elsewhere and thus not likely to stimulate the local economy. This confuses factory characteristics with the general image of the analogy—that the factory is the alternative capable of generating high multiplier effects. However, most factories typically utilize specialized equipment imported from elsewhere (slot machines and roulette wheels are no more specialized than automotive part stamping machines). Another criticism of casinos in this context is that they yield relatively high profits, which go to absentee owners and thus also leak out of the region. This is also true of very many factories (the latter due in part to their high capital intensity, often higher than casinos). The bottom line here is that even if a casino attracted only local residents, it would still generate multiplier effects through their direct and indirect purchases, wage payments, and tax payments. Also, multiplier effects of casinos would appear to be not much different than any other enterprise.¹³ The influx of capital to fund the casino construction activity also generates positive multiplier effects, and is a definite net infusion into the region, since most casino financing is external. Again the construction impact may not be larger than building a more conventional factory, but the impact is definitely positive, and the factory investment may not be as readily forthcoming.

b. What is the reasonable range of multiplier effects? This is an easy question. Once the adjustments have been made to subtract substitution effects, to add recapture effects (to be discussed below), and to consider broader implications, there is little if anything special about casino gambling multiplier effects. The main reason is that multiplier effects refer to indirect and induced spending from the remainder of the economy, and this economic backdrop is the same whether a casino or a new auto parts plant is placed in its midst. From my 25 years of experience in the field, there are some rules of thumb on multiplier effects. Small cities or groups of rural counties are not likely to have multipliers exceeding 1.5, medium-size to large cities would have multipliers not exceeding 2.0, and very large cities or state multipliers would typically not exceed 2.5. All of these estimates factor in associated annualized construction and tax/expenditure activities, which probably contribute about 15-25% of the higher-order impacts. Most of the models used in neutral studies had associated multiplier values within these limits.

3. How large are recapture effects? The ability of a new casino to keep customers in its market from venturing out to casinos elsewhere depends on a host of factors, but primarily casino characteristics and location. Casinos are best able to compete with alternatives in the same class (size, gaming choices, amenities, and image) and have a distinct advantage the farther they are separated geographically. Thus, small to medium rural casinos in Missouri can be extremely effective in keeping State residents from driving to Iowa (but still not when the Iowa locations are closer to an individual customer). At the same time, these Missouri casinos are relatively ineffective at keeping residents from traveling to Las Vegas. Las Vegas is probably the most insulated market, but still susceptible to competition elsewhere, as indicated in part by its recent moves (and success) to broaden its market to attract family vacationers to multipurpose resort hotels. Even Atlantic City has been eroded significantly by Foxwoods and by the even more remote casinos in Minnesota. MN Planning (1992) reports that airline trips from the Twin Cities to Atlantic City fell from 7,675 in 1989 to 0 in 1991 after the advent of Indian reservation gaming in that State. Leven and Phares (1998) found a 53% recapture rate for Missouri, which offsets their substitution effect finding of 75% by more than 70%. Such a high offset is not uncommon in other locations.

4. How significant is the saturation effect?

a. To what extent is this the long-term aspect of the recapture rate? Economists have long realized that supply does not create its own demand. Opponents of casino gambling have suggested that casino developers and promoters, however, are making this work through aggressive marketing or the inherent temptation of sinful activities. On the other hand, serious analysts project that gambling in the U.S. can grow by another 10+% over the next decade and others have statistically measured the income elasticity of demand for gambling at 1.5 (i.e., people's spending on gambling goes up 1.5% for every 1% increase in their income on average). Still, there are localized exceptions on the upside and downside. For example, Atlantic City has experienced only nominal growth since the Foxwood Resort opened, and Watkins and Ford (1994) predict saturation for Foxwoods is 10-20 years away.

b. To what extent does saturation affect the substitution rate? Saturation could lead to a worst case scenario for those counting on significant impacts or could lead to a situation of convenience gambling everywhere. Obviously, if every metropolitan area had a Las Vegas style hotel (and perhaps a small casino) for those put off by large size, no one would travel far to gamble, and the substitution effect would reach 100% (not counting any savings adjustment). Chances of this happening are remote given institutional obstacles, public attitudes in some areas, and the market's ability to foresee the downside of such an arrangement (including the market forces of specialization and agglomeration economies at work).

c. To what extent are casino failures a problem? To most economists, the startup and failure of business is an inherent part of a capitalist system and its associated dictum of survival of the fittest. It is actually considered a healthy sign, and again the problematic aspects may be more of a distributional (equity) rather than an aggregate (efficiency) issue. The record so far indicates that dramatic saturation has taken place in some locales. Prime examples include Deadwood, South Dakota, where 60% of the casinos became unprofitable and 20% became marginal with the advent of gaming in Colorado, and also include Iowa, where some riverboats pulled up anchor to venture to points on the lower Mississippi that were less subject to competition. The aggregate downside of the saturation phenomenon is wasted investment for private individuals or for governments that have offered infrastructural improvements or tax abatements to attract casinos. Other downsides are former employees and support businesses that may have been lured to the region by casino promises, and that are now stuck (but not necessarily without alternatives). Goodman (1994) and others have pointed out that communities too dependent on casinos are in an ever weakening bargaining position as saturation sets in, thus forcing them to make an increasing number of tax or service concessions to help keep businesses going.

d. How is the spread of casinos affected by the degree of competitiveness in the industry? Wright (1996) has suggested that the current business/regulatory environment for casinos is artificial and prone to the perpetuation of monopolies; he notes that "open entry would maximize economic growth effects." These monopolies (in a local sense since many casinos do have competitors in the larger regional geographic market) are very stable but generate higher profits than in a competitive environment. Economists note that monopoly profits reflect a misallocation of resources, ironically, in this case, with respect to fewer casinos than the market would warrant. In addition, this market power position is accompanied by higher than competitive prices, which causes a redistribution from customers (generally representative of the population) to casino owners (relative wealthy at least once the monopoly profits roll in). This argument, however, is countered somewhat by the cost savings of large size (e.g., economies of scale), some of which are passed along in lower prices.

5. Are there broader economic effects that should be considered?

a. What are the broader short-term negative impacts? (Various other social costs are discussed below.) One of the most measurable negative impacts is the drain on public services, such as sewers and road maintenance. More controversial are the costs of increased crime and crime prevention in casino neighborhoods and even in adjacent communities (Friedman et al., 1989). The cost of criminal activity or its prevention are significant, though the statistics do not look quite as bad when they are tourist adjusted. Aside from the statistics is the generally held belief that casino operators realize that street crime is bad for business and are strong supporters of local law enforcement and the promotion of proper behavior on their premises. Other more measurable economic costs relate to fluctuation in property values, which may impose some costs just because of their uncertainty. Also higher property values lead to higher property taxes, which may make it more difficult for small business renters (though not necessarily for property owners).

Overall negative impacts related to the economic carrying capacity of the region relative to the size of the new casino. A prime example is Deadwood, South Dakota, where casinos overran the downtown district and increased the demand for city services enormously, and generally overheated the economy causing a rise in prices in many goods and services. Goodman (1994) reports that such effects even hit relatively large population centers, such as Atlantic City, where nurses quit their jobs to become cocktail waitresses at higher pay, thereby forcing closing of an intensive care unit.

b. What are the broader short-term positive economic impacts? Economists suggest a value should be placed on anything that expands the range of individual choice. However, it can be said that this could be properly reflected in the price paid for participating in casino gambling. In addition, gambling, as an activity with definite probabilities, provides an opportunity for people to practice dealing with risk in a controlled setting. Prominent economists over the ages have emphasized the importance of risk-taking activity in entrepreneurship (and hence in economic growth), so there may be some positive, though probably unmeasurable, impacts here.

c. Are there longer-term economic impacts? No one has documented longer-term negative economic impacts of sustained casino operation, and Las Vegas and Atlantic City are testaments to generally positive outcomes, including diversification of the economy in the case of the former. I. N. Rose (1996) is still critical of Atlantic City, in essence for not becoming a shining example of urban redevelopment, but there is no guarantee that any other strategy would have been superior to gambling. To what extent can all of this be generalized to the smaller subsequent experiences? Given the long-run payoffs of relatively high investment in education, infrastructure, and redevelopment of casino operations versus a comparably sized factory (due to government spending of relatively higher taxes), there is every indication that the long-run impacts will be positive. Even if casino gambling fails, there is no indication that an already depressed area would be any worse off.

6. What kind of jobs do casinos provide? Casinos are often put forth as a good example of what is wrong with job creation in the country today. Their jobs have been characterized by Grinols (1995) and others as low-skill, low-paying service opportunities. For example, a WEFA (1997) study indicated that only 12% of the jobs at Foxwoods were executive/managerial, and the remainder were in the service worker category. A Mississippi study (Hill, 1994) of a 71% service worker proportion (well above the national average) with an average hourly wage of \$7.40 (well below the national average). However, Blois et al. (1995) found above average wages in the Foxwood case. Moreover, there is evidence that tips swing the balance to higher than average pay for some occupational groups.

Independent researchers, casino operators, and unions are quick to point out several other positive aspects. Walker (1998) has noted the strong wage growth among casino workers, and that 83% of the Hotel Employees and Restaurant Employees International Union had their health coverage paid in full (10 times the national average) and had pensions that exceeded the national average. Coopers & Lybrand (1994) found a 63% level of healthcare coverage among casino workers nationally, with 43% having access to daycare. Proponents also note that casino jobs have been an excellent welfare to work example. A Minnesota study found a significant decrease in AFDC payments following the advent of tribal gaming. Even if the skills learned are not high-level, permanent jobs enable people to develop good work habits and work records. The key to the question is whether there are opportunities for advancement within the industry or beyond.

We also refer back to the earlier insight that indirect jobs created through multiplier effects (often equal in number to direct jobs onsite) are a typical mix of those in the host economy. Thus, for example, the WEFA (1997) study found 25% of the indirect jobs stemming from Foxwoods were in manufacturing. Finally, casino jobs are the only immediate employment opportunity in some areas, especially the rural South, inner-cities, and Indian reservations.

7. What are the impacts of casinos on the size distribution of personal income? Not a single study to date has come close to providing a convincing answer to this question, but some insight can be applied from related questions and anecdotal evidence. If casinos offer jobs that would not otherwise be available, they reduce overall income inequality. (George et al. (1998) found that counties with casinos had unemployment rates two times the national average and minority populations three times the national average.) The movement in this direction is enforced if the wages are above average and offset somewhat if they are below average. High profits, which usually only go to a small number of individuals, raise income inequality, but, ironically, there is no effect on the host region's income distribution if the vast majority of profits go to owners living elsewhere (which is often the case except for Indian gaming).

Other determinants of the outcome pertain to who gambles and who pays the taxes, as well as who receives the benefits from the public services the taxes support. The first aspect varies considerably by location (recall Table 1C). Assuming patrons suffer losses on net (in addition to their outright payments for admission, meals, parking, etc.), then a clientele with a higher than average income helps reduce income inequality. However, there is a strong correlation between low incomes and the proportion of resident gamblers, so within convenience gambling areas the effect on income inequality is probably negative (relatively well-to-do tourists are not part of the income distribution base of a region). Several studies (see, e.g., Gazel et al., 1996) have indicated that gambling taxes are regressive, primarily because they investigated a patron profile in Illinois that was skewed greatly toward low incomes. These studies are implicitly balanced by those that found patrons to have relatively higher incomes. However, on the expenditure/benefit side, it would appear that distributional implications are very positive, since in most jurisdictions taxes are earmarked for public education, infrastructure, and economic development programs.

8. What are the racial/ethnic distributional implications of casino gambling? This question too has been addressed only partially. Employment studies (e.g., Walker, 1998) indicate good records in minority hiring, as well as the hiring of women. However, racial/ethnic minorities (e.g., Hispanics), with the exception of Native Americans, are not as likely to be sharing in the profits. In addition, a conclusion similar to that of the previous question pertains to the distributional implications of gambling losses and other expenditure by patrons along racial/ethnic lines. Of course, the analogy also follows for public expenditures, i.e., racial/ethnic minorities probably gained relatively more than others.

The most obvious reflection on this questions pertains to Native Americans; as a whole they have benefited greatly relative to whites and other groups, even though there is a sizable disparity among tribes. Deller and Chen (1996) have found some negative impacts on reservations, though the successes overall far outweigh these. For many tribes, casinos have been an economic salvation, and the gains have been spread across all members in the form of trust funds, necessary services, and luxury goods. It is not unusual for patrons exiting Foxwoods to remark, with some consolation, that they “have helped repay the Indians.”

9. What are the tax implications of casino gambling? As indicated in Table 1D, casinos are subject to higher levels of taxation than are other enterprises in most locations. Tax revenues are an enormous boon in Atlantic City where casinos provide 75% of the property taxes, in Nevada where the proceeds eliminate the need for personal or corporate income taxes, and in other jurisdictions where they have revived a moribund tax base. The relief to other forms of taxation helps attract other industries into a region, all other factors being equal.

a. Do gambling taxes pay for the government expenditures needed to support them? The preponderance of evidence is that they more than pay for normal expenditures on roads, police, and fire protection (though it is beyond the scope of the study to consider aspects of broader social costs associated with gambling addiction, etc.). They have not immediately always paid for initial “boomtown effects” but this can be remedied by better government planning.

b. Are communities overly dependent on casino tax revenues? There are several implications to this question. If casino gambling is viable in a community on a long-term basis, there is no difference from a fiscal standpoint in being a casino “company town” or an auto-manufacturing “company town.” Several analysts, such as Goodman (1994), have expressed concerns of undue influence that this provides for gambling interest. It appears that organized crime activity associated with gambling has decreased over the years, so one of the negative connotations has been eased. Moreover, any dominant employer will have undue political influence on a community. Casino operators are, of course, businessmen, and it is bad business (for the core group in place) to proliferate casinos in any locale. Even the gambling lobby nationally is limited by the

extent of the market, if not by even stronger opposition groups. Many studies have been performed on the advantage of diversifying businesses for the sake of promoting a stable tax base, if not a more stable regional economy as a whole. Some casino towns have in fact diversified, though most have not.

c. What are the interjurisdictional ramifications of casino gambling? This appears to be an increasing problem, though it too will probably be limited by the market. It is analogous to the common property resource problem associated with oil drilling, where, in an effort to avoid one's neighbor from intruding on the oil under one's land before you extract it, you drill frantically (as does everyone else), glutting the market and causing prices to tumble. This degenerate competition, or "race to the bottom," has the ramification of decreasing profits and causing an inordinate number of business failures (and the associated social costs to communities) if carried too far. But it is clear that many jurisdictions have worked aggressively with casino interests to get in on the boom in order to attract tourists or recapture their residents. On the other hand, a novel approach is being tried by California, along the lines of what economists call "threat of entry." A California Governor's Office (1992) study considering the legalization of casinos in that State, devoted a great deal of report space to the implications for Nevada gaming, and also suggested as an alternative the interstate sharing of casino taxes by Nevada along border sites to pay for infrastructure, the implication being that it contributed to facilitating travel to Nevada.

10. What are the social costs of casino gambling? It is beyond the scope of the study to evaluate all the ramifications of this question, but I would be remiss in not emphasizing its importance and will thus evaluate some of the major arguments. In question 6 above, I address the costs of crime, which is a social problem too, but much of it can readily be measured and factored into the government spending burden. Concerns about the role of organized crime in casino gambling have dwindled given the greatly heightened involvement of large corporations, and even one of its major critics, Robert Goodman (1994), claims that these days the infiltration is only in some related unions and ancillary businesses (and this is of declining importance). Even if the latter were the case, the dollar impacts of infiltration would be low, as opposed to the possibilities in casinos, where skimming of a high cash business has been estimated at one-quarter to one-half of the "handle" in previous eras.

The other major social concern with economic consequences is compulsive gambling. Grinols (1995), for example, places the cost of this problem as being as large a burden as would be a national recession every 10 years. Moreover, Kindt (1998), in a comprehensive synthesis of recent findings, contends that pathological gambling is on the rise, and that its cost between 1994 and 1997 was in the probable range of \$40 to \$50 billion (and that this was only a partial assessment and on the low side, since it is based on a social cost of only \$10,000 per pathological gambler). Statistics on pathological gambling range from 0.5% to 3.0% of the adult population of various states. At the same time, this refers to all forms of gambling and, the evidence is not yet conclusive that the casinos themselves are a major cause of this base population or of a significant recent increase in it.¹⁴ For example, studies on Minnesota (Emerson et al., 1994) and South Dakota (Volberg and Stuefen, 1994) indicated no statistically significant increase in pathological gambling in the aftermath of the introduction of casinos in those states. This is not to deny the existence of a strong correlation or many sad anecdotal cases, but it remains to be determined how prevalent or rare they are in relation to casinos alone. In addition, many estimates of the costs of pathological gambling include betting losses and bankruptcies as major components, but these are really simply transfer payments rather than true costs to society as a whole, in contrast to treatment costs or lost time from work. Moreover, as noted in the following section, measures can be implemented to lessen such social costs, and they need not be taken as a given.

11. What effect do government regulations have on casino gambling? It is well established that taxing an economic enterprise raises its costs of doing business and causes it to be smaller than it otherwise would

be. In addition, regulation of operations usually adds costs and constrains size as well. Taxation is usually justified on four grounds, in addition to just serving to pay for general government operations: 1) to pay for explicit governmental services, 2) to redistribute money from one segment of society to another, 3) to punish a sinful activity or what economists call a “merit bad,” and 4) to correct an externality, such as the cases of a pollution tax or bridge congestion toll. It would appear that casino taxation is based on the first of these three reasons. Some of it pays for public services that support casinos and other businesses. The relatively high taxation rates, are, however, probably due to reasons 2 and 3. For one, there is an impression of high profits in operating gambling ventures, a feature that is reinforced by government granted local monopoly status.

Monopoly profits are often considered unearned or unworthy profits with the image that they are ripe for the taking. This does not in itself mean the profits would be redistributed to the poor at all, or anymore than any other tax revenues. However, the earmarking of a substantial portion of tax revenues for education and redevelopment appears to be a combination of guilt and image motivation. Thus, the negative image of gambling is offset by spending on “merit good.” Casinos appear to be very willing to cooperate in this arrangement to improve their image as well.¹⁵

Casinos, of course, gain from government involvement, in addition to the obvious major gain of monopoly status. Some regulations help maintain financial stability of casinos and help convey the image of honest games of chance, even if not statistically fair games. At the same time, some regulations are onerous, e.g., a regulation that sets a goal and allows regulated parties to achieve it in any manner they choose is less costly than one that sets procedural standards and inhibits the range of response choices.

Many local governments and casinos appear to work reasonably well together to contribute to the economic base of their community. Another perspective on this is that government regulation does not necessarily uphold high civic standards for their own sake, but that the standards are malleable according to economic conditions. For example, as soon as it became evident that Foxwoods would eat into the Atlantic City market, casino regulators in New Jersey passed a series of reforms to relieve the regulatory cost burden (though, in their minds at least, not the regulatory goals). Some would view this as an example of “capture theory,” where the industry eventually wins control over those that would regulate it, while others would suggest that it is simply a matter of a shared vision.

The impacts of casino gambling are not a passive phenomenon and can be significantly modified by government (and by industry practices). Early regulations in Atlantic City that promoted self-containment of casinos limited the size and spread of direct and indirect economic impacts. Attempts are being made to counter problem gambling and, to some extent, compulsive gambling by monitoring, education, and treatment, though results are inconclusive. The burden of other negative effects can be eased through compensation.

12. Are there dynamic aspects of the issue that will make future impacts of casino gambling different from those of the past? For the most part, the discussion so far has focused on past and current impacts, but will changing circumstances in the future shift the outcomes? Many of the determinants of the bottom line outcomes are constants, but some, in fact, are variable. For any new casino, there will be positive multiplier effects stemming from economic interdependence. These multiplier impacts will, however, increase in established casino communities, as more specialized support industries enter the region (thus decreasing imports, which cause multiplier leakages). On the other hand, the proliferation of casinos will increase the substitution effect because it will be harder for any location to attract tourists, other things being equal. On net, we can probably expect impacts to be somewhat smaller for new casino communities in the future if the national rate of casino growth exceeds a market equilibrium growth rate. The key then is how fast the demand for casino gambling will grow. There are a broad range of estimates, but one important insight stems from the theoretical proposition, and its empirical verification, that gambling is income elastic, meaning that as a person’s income increases his/her spending on gambling increases even more. In fact, the findings of an income elasticity of 1.5 are not unreasonable. For the U.S. population as a whole, this means that if personal income grows at an inflation-adjusted rate of 2.0%, spending on gambling will grow at 3.0%, and for quite sometime. Of course, casinos are one part of the gambling picture, but there is little indication of a shift among the components. In addition, this is aside from marketing maneuvers (e.g., Las Vegas family targeting) and

aside from an easing of the stigma on gambling. At the same time, electronic gaming, including internet access, and new forms of entertainment could significantly offset it.¹⁶

13. What is the bottom line economic impact of casino gambling? Very pointedly, economic theory and the preponderance of evidence indicates that the aggregate direct and indirect impacts of construction, operation, and taxation of casinos are significantly positive. Broader economic costs relating to factors such as the use of government services and changes in property values are not trivial, but they do not come close to canceling out the more conventional output, income, and employment gains. Moreover, these broader negative impacts might be offset by some longer-term positive impacts stemming from increased spending on education, infrastructure, and redevelopment. Social costs of gambling are beyond the scope of the study, but they warrant careful study.

The preponderance of empirical studies indicate claims of the complete “cannibalization” of pre-existing local restaurants and entertainment facilities by a mere shift in resident spending is grossly exaggerated. The substitution effect is not insignificant, but it is offset somewhat by empirical verification of a recapture effect. These two effects vary on a case-by-case basis, but we have enough evidence to place bounds on their size if we know the proportion of casino patrons who are tourists and the distance of the casino to its nearest competitors elsewhere. Casino construction usually represents an infusion of capital to a region, though profits are not necessarily reinvested in it. However, taxation of casino revenues and profits are usually high, and their recirculation in the region is complete.

The indirect impacts of casino operations are felt via multiplier effects throughout a community in terms of increases in sales, income, and taxes as well. This is not to deny that some enterprises will suffer a loss of business, but they may even be limited to direct effects, as their direct suppliers may be able to shift to contracting with casinos, hence stemming any losses to more upstream suppliers.

The evidence on the distributional impacts of casinos is more spotty but does yield some reliable conclusions. Casinos have provided a large number of direct jobs, though they are typically below the average wage. While these are not the type of jobs the U.S. needs to ensure its economic prominence among the world nations (in contrast to, say, high-tech, high-paying jobs), they do yield many economic benefits, including helping people get off welfare roles, improving their access to health benefits, establishing a good employment record, and accumulating savings to purchase a home and to educate their children. The direct distribution of profits on a regional basis is likely to be poor because of absentee ownership, but this is true of any large business in the U.S. Also the situation is much more positive in the case of Native American casinos, where in many instances all the members of the tribe are part of ownership. Of course, some indirect redistribution of profits is attained from non-Native American casinos through relatively high levels of local government taxation and spending on public services that most help the economically disadvantaged. Casinos have an excellent record of hiring women and minorities, though they lag substantially behind in terms of ownership by these groups (as do most large businesses). For Native Americans, casinos have been an economic boon, and they represent a very positive example of a minority sharing in the profits. On the other side, in some communities, minorities and the poor are a disproportionate percentage of the clientele and therefore a source of gambling losses.

Fears that gambling will proliferate throughout the country in a zero-sum game of shifting dollars, abandoned facilities, and every possible social ill are exaggerated. The marketplace will to a great extent dictate the pace and location of casino gambling, coupled with a continuation of government restraint.

VII. SUGGESTIONS FOR FUTURE RESEARCH

A. Guidelines for Future Studies

The following are some guidelines the NGISC should set forth for future studies of the economic impacts of casino gambling:

1. Provide a checklist of major aspects of casino impacts that should be included in any future studies (e.g., substitution, recapture, multiplier effects, government service costs). These should also be analyzed for annualized construction and tax/expenditure impacts. This will provide a useful template for future analyses of the subject.
2. Provide bounds for key determinants in relation to casino characteristics (e.g., size, type, location). Examples would be ranges of acceptable estimates for substitution or recapture effects. These can serve as a check on future empirical studies and impact estimates, or can serve as default values where time and resources do not permit a more extensive analysis.
3. Encourage that estimation of social costs, especially those associated with crime and problem gambling, be included in gambling impact studies. Also provide some bounds for such estimates.
4. Encourage a standardization of definitions and terminology. For example, the concept of the substitution effect is standard in economics and this term is preferable to using “displacement” or “cannibalization,” except as occasional synonyms. More importantly, an appropriate base for the substitution effect should be established, the best one being the proportion of previous spending on goods and services by residents that is now spent on casino gambling in the region.¹⁷
5. Provide references to pedagogical works that explain the appropriate use of alternative methodologies.

B. Agenda for Future Research

The NGISC should also consider commissioning the following studies:

1. Studies measuring the extent of key determinants, such as substitution and recapture effects (some considerations such as multiplier effects have well-established bounds). The ideal product would be estimating equations that could serve as shortcuts for future studies.¹⁸
2. A study setting bounds for social costs of crime and problem gambling.
3. A study of the national and regional markets for casino gambling (and gambling in general), as a basis for future estimates of saturation effects.
4. A study of the distribution of impacts across income brackets and racial/ethnic groups. This could serve as a much-needed template for future impact analyses, since these considerations have so often been neglected previously.

5. A study of the relative merits of alternative modeling approaches (primarily input-output, econometric, and computable general equilibrium analysis). Computable general equilibrium models have not yet been applied to casino impact analysis, but have great potential, especially for insights into market and price effects.
6. A study of how Native American and non-Native American gambling experiences have differed and what the two sets of experiences can learn from each other.
7. A study on how industry and government might cooperate to enhance and more widely distribute the benefits of casino gambling.

It would appear that sufficient data and models already exist to address research agenda items 1, 3, 5, and 7 in a short amount of time (less than one year).

VIII. CONCLUSION

The foregoing conclusions have been drawn after carefully assessing over 100 writings on the subject of casino gambling, the vast majority of which measured the direct and indirect economic impacts. Goodman (1994) in his U.S. Gambling Study Report found nearly all of the 16 major studies he reviewed to be biased, in all cases in favor of gambling. I found the majority of the studies to have biases, most in favor, some opposed. In many cases, the biases were intentional, as were the omission of key considerations, while others that arose from the narrow scope of the study lack of data, mechanical application of simple models, or from lack of sophistication on the part of the analysts.

To what should we attribute the difference in my findings and those of Goodman? One explanation is that my study has been undertaken four years later, and the state-of-the-art of casino impact analysis has improved. To a greater extent, this is not so much a matter of invoking more sophisticated models but because analysts now realize that, to be taken seriously, they have to address the substitution effect, the recapture effect, and the market saturation issues (though these are still not always done properly). Several analysts also take note of social costs and attempt to quantify them (though they often do not actually integrate the numbers into their bottom line). Another explanation is that Goodman appears to rely very heavily on anecdotal evidence and upper bound estimates of social costs in drawing his conclusions.

A sufficient number of properly done studies, as well as adjustments in the findings of some flawed studies, enable me to state the conclusion: a new casino, of even limited attractiveness and placed in a market that is not already saturated, will yield positive economic benefits on net to its host economy. It should, of course, be added that it appears that most markets are not yet saturated. Also, this does not mean that every casino project has lived up to expectation, but the same can be said of many individual projects in general, as well as of broader redevelopment plans. This conclusion does not factor in the social costs of problem gambling or crime as well. In essence, however, as several researchers have correctly noted, analyzing the impact of a new casino is not so much different than analyzing the impact of a new retail center or entertainment complex in a region, compulsive gambling aside.

ENDNOTES

* This report has been written in the author's capacity as President of Adam Rose and Associates. He is also a Professor and Department Head at The Pennsylvania State University main campus at University Park, which is in no way connected with this report. The author is solely responsible for its contents, including any omissions or errors. He would like to thank the staff of the National Gambling Impact Commission, including its Research Director, Dr. Tim Kelly, for providing him with numerous reference items, and Peter Reuter, Consultant to the Commission, for providing valuable comments on earlier drafts of this report. Dean Hestermann and Charles Dobson also provided helpful comments on the draft final report. The research assistantship of Gauri Guha in collecting data and contributing to the statistical analysis and Abby Sacks in collecting the remainder of the references is also gratefully acknowledged.

¹ The chain reaction is also often characterized by the ripples that spread around the point of impact of a rock thrown into a pond. They can only be traced directly at great expense; however, various types of economic models can yield reasonably accurate approximations of them.

² Examples of methodological advances and their application can be found in such professional periodicals as *Journal of Regional Science*, *Journal of Policy Modeling*, *Economic Systems Research*, and *Impact Assessment Review*.

³ In general, the multiplier is a direct function of leakages in the spending stream. At the regional level, sectors that have higher multipliers will be those that are generally more labor intensive (labor typically comes from within the region) and utilize less specialized equipment (which can usually be produced within the region).

⁴ Econometric studies often simply yield total impacts and find it difficult to distinguish between direct and indirect components.

⁵ This is often the case in impact analyses in general but for no good reason.

⁶ My "valuation" of some of these individual characteristics is contained in Table 2B, which translates individual types into numerical scales.

⁷ Substitution effects are reported both in terms of the percentage of patrons that are local residents and in terms of substitution rate relating to actual expenditures. The two would be equivalent where patron expenditures were the same as tourist expenditures, though the latter are likely to be larger given spending on lodging, and, to a lesser extent, for meals away from home. Compounding the confusion is the fact that some substitution rates are measured in terms of percentage of spending by residents to be subtracted from previous spending for local goods and services. Still another complication is that some spending by tourists on gambling displaces expenditures they would have made otherwise in the region.

⁸ In the future, statistical tests will be performed using casino size variables, the difference in explanatory effect and power between this approach and the regressions utilizing Direct Output being attributable to the exclusion of offsite direct spending effects.

⁹ A specification that substituted three socioeconomic background conditions (population, unemployment rate, per capita income differentials) in place of direct output DO was also run, but yielded an \bar{R}^2 of .219 and not a single statistically significant variable.

¹⁰ The results for the Reliability Component variables are not robust, however. In a variant of Equation 2 that included both Reliability Components and Reliability Weights (to be discussed below), the Analytical Approach and Simplifying Assumption variables were statistically significant. Moreover, both were positive implying that more sophisticated approaches tended to yield higher regional impacts and that stronger simplifying assumptions (primarily no offset or other negative effects) did so as well. In addition, a preliminary run with fewer observations

and slightly different coding on a couple of the qualitative Reliability Component variables yielded statistically significant results for the Data, Publication Outlet, and Author Credentials variables, all with negatives signs, meaning that lower quality studies tend to yield higher regional economic impacts of casino gambling. (Note that the results of Equations 1 and 3 were robust, i.e., highly insensitive to these changes.) Overall then, the results regarding these Reliability Component variables are inconclusive.

¹¹ Of course, there is some overlap because in many cases gambling activity in a casino subsidizes low-cost meals in casino restaurants, which might also attract more local residents to the casino complex principally for the meal itself.

¹² The case of Atlantic City, where many bars and restaurant closed following the introduction of gambling, even has a positive explanation. First, the trend of closings was strong before casinos were approved, and it is likely the casinos had a marginal impact. Also, the number of restaurants and bars in the larger metropolitan area has increased, which includes places where workers and other population spurred by the introduction of casinos live and where some tourists may stop enroute to purchase services. Obviously, an increase in property values (and hence taxes) puts a squeeze on some operators, especially renters (property owning restaurateurs, even if they went out of business, reaped the gains of these property value increases), and again this is more a matter of distributional than aggregate impacts.

¹³ Good indication of this are profiles of direct casino spending on material inputs, such as maintenance, advertising, food, etc. Gazel et al. (1996) estimate that the vast majority of these expenditures for the case of Wisconsin were from in-state suppliers, the major exception being replacement slot machines.

¹⁴ Spreyer et al. (1997) found that as many as one out of six businesses in New Orleans had an employee with a gambling problem that affected them. At the same time, the authors emphasized that casino gambling had only existed in the City for two years and that their data were better interpreted as a baseline for future studies than as conclusions.

¹⁵ Note that casinos are not the only businesses interested in promoting their public image; the same has been true for many years for chemical companies, electric utilities, and mining companies.

¹⁶ Some casino locations are very attractive to foreign tourists. For example, the uniqueness of Las Vegas is likely to make it a perpetual tourist draw. At the same time, this makes such locations vulnerable to economic business cycles elsewhere, as witnessed by the tapering off of Las Vegas casino/resort profits recently as the inflow of “high rollers” from Asian countries has been sharply curtailed due to the economic crisis in their home region.

¹⁷ The concept of what proportion of casino customer total spending (including that of tourists) represents a shift from previous local spending should be given another name, e.g., “net customer spending.” Also, several studies use the term “induced effect” to mean a variety of impacts, such as direct spending by customers offsite (e.g., in restaurants and gasoline service stations). The term, however, has a well-established usage in input-output economics as being the multiplier effects of income payments to households.

¹⁸ Examples of a good start at this are found in Gazel et al. (1996).

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