

Quantification of the Social Costs and Benefits of Gambling*

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I. Introduction

The gambling literature includes research by psychologists, sociologists, economists, lawyers, and others. One area of interest to all of these researchers is how to quantify the costs and benefits of gambling. There is little agreement among researchers about the appropriate way to conceptualize and quantify the effects of gambling on society. Part of this disagreement is due to the different perspectives from which researchers approach the problem. Also, since the literature is still very young, one cannot expect agreement among all researchers. In this paper I discuss some of the potential problems with quantifying the costs and benefits of gambling. It is important to understand these problems, because a failure to consider them can lead to a misinterpretation of published cost-benefit analyses and misinformed policy prescriptions involving an important and growing industry.

A standardized methodology

Legalized gambling provides benefits for consumers and possibly local economies. On the other hand, pathological or problem gamblers impose costs on society. But if a particular cost is “social” according to one research perspective but “private” from another perspective, adherents to one view may see the other perspective as ignoring significant social costs of gambling.¹ Gambling research would improve significantly if we could adopt a standardized methodology for identifying and measuring the costs and benefits of gambling.

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¹ An example here is the criticism almost everyone has of economists, that they ignore wealth transfers when these may amount to serious consequences to those facing decreased wealth.

Economists use the concept of gross domestic product (GDP), the dollar value of all goods and services produced in an economy during a year, to compare productivity and economic growth across countries and through time. Although it is not a perfect measure of well being, it does provide a mechanism for comparisons. Psychologists use the DSM-IV for criteria to diagnose various types of problematic behavior, including pathological gambling. Having this standard is arguably better than relying on individual therapists' subjective criteria. Similarly, a standardized methodology for quantifying the social costs and benefits of gambling would be beneficial.

Developing a standardized methodology would have at least three positive effects on research. First, a standardized methodology would allow researchers to more effectively contribute to the policy debate over gambling. Second, it would enable comparisons of costs and benefits across regions and through time. Third, it would provide a foundation by which the effectiveness of various pathological gambling treatment mechanisms could be tested.

The purpose of this paper is to explain some of the difficulties in measuring the costs and benefits of gambling. Part of the discussion necessarily involves how social cost and benefit are defined. The goal in discussing these issues is to help move researchers in the direction of adopting a standardized methodology. The paper is organized into five additional sections. The remainder of this section briefly summarizes three distinct approaches to the costs and benefits of gambling. Section II addresses some research quality and bias issues. Sections III and IV examine a variety of unresolved issues on the benefit and cost sides of the equation. Section V addresses some of the difficulties in quantifying the effects of gambling, and Section VI concludes the paper.

At the 1st International Symposium on the Economic and Social Impact of Gambling (the "Whistler Symposium," September 2000), researchers from a variety of disciplines and perspectives met to discuss the appropriate way to identify and measure the socioeconomic effects of gambling. Little ground seems to have been made, in terms of agreeing on the appropriate methodology. As Wynne & Shaffer (2003, p. 120) explain,

While the ultimate goal of the Whistler Symposium was to derive “best practice guidelines” for conducting future gambling socioeconomic impact studies, participants rapidly realized this was an overly ambitious expectation that would not be achieved. Moreover, the Symposium experience showed that there was little consensus on (a) the most salient philosophical perspective, or conceptual framework, that should underpin research into the social and economic impacts of gambling; (b) definitions of private costs versus social costs attributable to gambling; (c) what costs and benefits should be counted in socioeconomic impact analyses; and (d) the best methods for measuring gambling benefits and costs.

The three major perspectives represented at Whistler were cost-of-illness (COI; Single, 2003), economic (Collins & Lapsley, 2003; Eadington, 2003; Walker, 2003), and public health (Korn, Gibbins, & Azmier, 2003).² Each of these approaches is briefly described below.

Cost of illness (COI)

One popular mechanism for estimating the costs of problem gambling is based on COI studies, which have previously been applied to alcohol and drug abuse. Single (2003) describes these generally, while Single, et al. (2001) provide a detailed explanation of the approach:

The impact of substance abuse on the material welfare of a society is estimated by examining the social costs of treatment, prevention, research, law enforcement, and lost productivity plus some measure of the quality of life years lost, relative to a counterfactual scenario in which there is no substance abuse.

As Harwood, Fountain, & Livermore (1999) explain,

Underlying...COI [studies] is the premise that an illness or social problem imposes “costs” when resources are redirected as a result of that illness or problem from purposes to which they otherwise would have been devoted, including goods and services and productive time.

There are other approaches that are commonly associated with the COI approach. These include the “willingness to pay” and “demographic” approaches (Harwood, et al., 1999).

The COI approach to problem gambling is useful because it has its foundation in alcohol and drug studies; so the application to problem gambling does not require a reinvention of the wheel. In addition, this approach has much in common with the “economic” perspective described below. For example, the issue of opportunity cost (or the counterfactual scenario) is important in both. They differ, though, in how they treat worker productivity and some types of expenditure.

² The Whistler Symposium papers were published in *Journal of Gambling Studies*, vol. 19, no. 2 (summer 2003).

Like the other approaches described below, COI studies are not without criticism (e.g., Reuter, 1999; Kleiman, 1999). As the name suggests, COI studies are focused on the costs, not the benefits, side of the equation.

Economic

The economic approach, as explained by Eadington (2003), Collins & Lapsley (2003), and Walker (2003), shares much with COI studies. Indeed, many of the same “costs” appear in both perspectives. However, there are differences in what should be included as a cost, and how they should be measured. (Several examples of disagreement are highlighted below.) The economic approach is more general than the COI approach, because it provides a framework for also classifying and measuring benefits.

The “economic” perspective is described by Walker & Barnett (1999, p. 185) as being concerned with the overall level of aggregate wealth in society. If an action decreases the overall amount of wealth, then it is a social cost. (“Wealth” refers to well-being, not just material wealth.)

This approach has been criticized by McGowan (1999) and Thompson, Gazel, & Rickman (1999), among others. Researchers have argued that the economic approach ignores certain negative effects of problem gambling (e.g., Hayward, 2004, p. 4). However, many of the criticisms are unfounded because they are based on an assumption that “economic” implies “money measurement.” This is more a description of accounting than economics. Most of this paper focuses on the economic perspective on gambling.

Public health

The public health perspective is perhaps the most general of the three approaches introduced here. It is based on the Ottawa Charter (1986), and focuses on prevention, treatment, harm reduction, and quality of life. In terms of gambling, it focuses on how gambling can affect individuals, families, and communities (Korn & Shaffer, 1999, p. 306).

The public health approach does not primarily focus on how to measure costs and benefits. Still, economic costs and benefits are an important component of the public health perspective. There are quality-of-life components that defy measurement, and it is important for these to be considered, along with easier to quantify components. In this sense, the public health framework helps to show how the other approaches fit into the big picture.

While there are some areas of disagreement among the different perspectives, there are also some significant differences. Each approach has its merits and limitations, and each would imply a different approach to measuring the costs and benefits from gambling.

II. Research quality

Since gambling research is by its nature interdisciplinary, it is to be expected that different authors approach the measurement of costs and benefits in different ways. For an example, as an economist, I am an adherent to the concept of “consumer sovereignty.” This is the assumption that the individual consumer knows better than other people what will make him best off. The result of this is an almost libertarian perspective toward gambling (and many other consumer behaviors)—government should allow individuals to do whatever they wish, so long as they do not harm others. Economists who take on more of an advocate position begin to see other potential roles for government. A sociologist may examine the same issues, but have a predisposition for government control of markets. Psychologists may not spend much of their research effort on examining the appropriate role of government in a free society. Some aspects of disagreement in the literature are the natural result of differences in the academic disciplines.

Aside from discipline-specific influences that may manifest themselves in the literature, there have also been cases of blatantly biased research appearing, sometimes in very reputable outlets. Much of the “early” (mid-1990s) research on the effects of gambling involved empirical estimates based on questionable methodologies. Many of the published studies were “advocacy” pieces, rather than scientific inquiries (Shaffer et al., 2001). The work by Goodman (1994; 1995), Grinols (1994; 1995; 2004), Grinols &

Mustard (2001), and Kindt (1994; 1995; 2001) are clear examples of advocacy. These authors are staunch anti-gambling activists, and their writing reflects this. For example, they fail to cite any literature that disagrees with their perspective, or that might lead a reader to believe that there is debate on the issues (Eadington 2004; Walker, 2006). Perhaps more importantly, some clearly biased research has shown up in very respectable outlets (e.g., Grinols & Mustard, 2001 and 2006; Grinols, 2004; Kindt, 2001).

On the other side of the ledger, many of the studies purporting to estimate the economic benefits from legalized gambling are simplistic in their empirical models. Some of these are nothing more than guesswork. The casino industry, for example, has hired accounting firms to produce studies finding real benefits from legalized gambling (e.g., Arthur Anderson, 1997). There has not been as much research effort on the benefits as there has been on the costs of gambling.

Questions about research quality/legitimacy have been raised in comprehensive analyses (Australian Productivity Commission [APC], 1999; National Gambling Impact Study Commission [NGISC], 1999; National Research Council [NRC], chapter 5, 1999), as well as in more narrow critiques (Walker & Barnett, 1999; Eadington, 2004; Walker, 2004). The NRC (1999, p. 186) explains, “most [studies] have appeared as reports, chapters in books, or proceedings at conferences, and those few that have been subject to peer review have, for the most part, been descriptive pieces.” The result has been questionable, if not counter-productive, research: “In most of the impact analyses...the methods used are so inadequate as to invalidate the conclusions. Researchers...have struggled with the absence of systematic data that could inform their analysis and consequently have substituted assumptions for their missing data” (p. 185). For example, in many social cost studies, researchers use *ad hoc* methodologies to identify and measure costs.³ As a result, the annual social cost estimates have ranged from a “conservative” \$9,000 to above \$50,000 per person.⁴ Certainly there is no standardized methodology.

³ Examples include Goodman (1994; 1995), Grinols (1994; 1995; 2004), Grinols & Mustard (2001; 2006), Grinols & Omorov (1996), Kindt (1994; 1995; 2001), and Thompson, et al. (1997; 1999). See Walker & Barnett (1999) and Walker (2003) for a more detailed review of the literature on social costs.

⁴ These estimates are by Thompson, et al. (1997) and Kindt (1995), respectively.

Gambling research, even when it is clearly biased, can be very influential.⁵ This is because the research has an obvious, direct link to policy. Since the field is relatively young, a new study is likely to address a problem that hasn't been examined before, or is likely to be seen as adding to existing but inconclusive evidence. As a result it is more likely to receive attention by other researchers, policymakers, and the press. In more mature research areas (say international trade), a new article may not have much of an impact on policy simply because there is a long history in the literature.

Since gambling research is interdisciplinary, and since many of us have not read extensively outside of our own field, it may be difficult to spot bias except in our own area of expertise. Biases aside, there are other important controversies over measuring benefits and costs of gambling.

III. Unresolved “benefit” issues

The long-standing areas of disagreement on the benefits of gambling deal more with the degree, rather than type, of benefits. Most researchers acknowledge that legalized gambling may have positive economic impacts. These may include increased employment, higher average wages, capital inflow, increased tax revenues, and more choice for consumers.

The gambling industries have promoted gambling for their own profit, of course, and for the potential economic benefits that may accrue to the local economy. Recent evidence suggests there may even be health benefits from gambling, for some (Desai, et al., 2004). Despite some agreement on the types of benefits that may result from legalized gambling, there is debate over how these should be measured.

Tax revenues

Most researchers, politicians, newspaper reports, and citizens seem to believe that the tax revenues from gambling are one of the primary benefits of legalized gambling. Indeed, this is one of the major

⁵ For a discussion of biases in the gambling literature, and in particular the *Managerial and Decision Economics* issue on gambling edited by Grinols and Mustard, see Eadington (2004).

selling points of casinos. However, from a purely economic perspective, tax revenue should not be considered a net benefit of any policy. The reason is that the taxes gained by government come at the expense of the taxpayer. In other words, the benefits to one group are offset by costs to another group.

Even so, voters or politicians in a state/province/country may decide that certain types of taxes are preferable to others. For example, if there is the choice between an “optional” tax, like a tax on lotteries or casino owners—where taxes fall on the consumers or sellers of specific “sin” goods, and an “unavoidable” tax like a sales tax, then many people may prefer the lottery tax or taxes on casino revenues over a general sales tax.⁶ The popularity of casinos as a fiscal policy tool has something to do with politicians wanting to generate tax revenue in a relatively painless way. Taxes on casinos are likely to face less opposition than increasing a general sales tax. Overall, taxpayers would prefer “optional” rather than unavoidable taxes, so in this sense, gambling taxes could be considered a benefit. In cases where casinos are located on state or country borders, much of the tax revenue may accrue from outsiders. In this case, the tax revenue can be counted as a benefit to the local population, who may see their tax burdens decrease.

Obviously, good records exist for tax revenue, so these are relatively easy to measure. Still it is the *net* change in tax revenue that is important, not simply the absolute taxes paid by casinos or raised through lotteries.

Income and employment

When a community is considering legalizing casino gambling, for example, one of the major benefits they expect is an increase in local employment and the average wage rate. Yet, analyzing the effect of a new industry to a community can be tricky. Does the new industry create new jobs, on net, or are jobs merely shifted among industries? This is an important issue that is commonly raised by researchers (Grinols, 2004). Even if the gambling industry “cannibalizes” existing industries, is the community better

⁶ From consumers’ perspective, a sales tax *is* avoidable, but not easily, and much less so than a casino tax.

off because of higher wages, or increased competition among employers for qualified employees? The effects of gambling on local labor markets have not received adequate attention in the economics literature.

Grinols & Mustard (2001, p. 147) argue, “There is no net gain to the economy from shifting a job from one location to another unless it increases profits to the economy.” This is wrong. First, if the casino job creates more value for consumers than the old job, regardless of overall profits in the economy, then the new job is beneficial to the economy. Furthermore, Grinols & Mustard (2001) ignore the fact that workers who switched jobs to work at casinos must benefit by the new job. Indeed, for all casino employees, their casino job must be the best employment opportunity available to them; otherwise they would be working somewhere else. This effect is certainly difficult to estimate in money terms, but its abstract nature does not mean that it is irrelevant. Overall, there are probably significant employment benefits from the expansion of gambling industries.

Consumers’ surplus and variety benefits

Perhaps the greatest potential benefit from legalized gambling is the enjoyment consumers receive from the activity. After all, consumers vote on their favorite goods and services with their money. The consumers’ benefits from gambling are certainly much greater than are tax revenues or employment growth. Several authors have acknowledged this (Eadington, 1996; APC, 1999; Walker & Barnett, 1999; Collins, 2003), but most researchers discount or ignore it (e.g., Grinols & Mustard, 2001; Grinols, 2004). Yet, consumer benefits are critical to understanding how the availability of gambling can benefit society.

There are at least two potential sources of consumer benefits from casino gambling. Normally, consumers benefit when increased competition in markets leads to lower prices. This is one source of consumer surplus,⁷ illustrated in two examples. First, sometimes casinos advertise particular games. If one casino offers craps players “10X odds,” while other casinos offer only the standard 2X odds, this is price

⁷ Consumer surplus is the difference between what a consumer is willing to pay, and what he must pay, to purchase a good or service.

competition.⁸ If one casino advertises that its slot machines pay-off a higher percentage of handle than other casinos, it is a form of price competition. If the effective price of playing the casino games falls, then consumers' surplus rises. Second, casinos are often bundled with other products like hotels and restaurants. To the extent this increases competition in the local restaurant and hotel markets, whether through price decreases or quality increases, the casinos provide benefits to consumers in the form of consumers' surplus. These benefits have been ignored in most cost-benefit of gambling studies.⁹

The other consumer benefit that has been ignored by most researchers relates to product variety. When casino gambling is first introduced to a state, for example, it has the effect of increasing the product choices for consumers. This "variety benefit" could be significant, but it is difficult to measure.¹⁰ In his recent book, Grinols (2004) completely ignores both of these potential benefits from gambling, and instead focuses on a rather insignificant benefit, "distance consumer surplus."¹¹

Some of the largest benefits of gambling defy measurement. As a result, many researchers focus on more obvious and easy-to-measure benefits of gambling, like employment and tax revenues. If research is to improve in quality, these consumer benefits must be estimated somehow.

IV. Unresolved "cost" issues

The "social cost" of gambling is perhaps one of the most debated economic issues in the gambling literature. Among the different research approaches, there is little agreement either on how to define a cost or on how to measure it. This makes the cost side of the equation more difficult to deal with than the benefits side.

⁸ This is a fair bet placed behind the pass/don't pass line bet. This is one of the few statistically fair bets offered at casinos.

⁹ In the case of casinos, many researchers have instead focused only on the "cannibalization" effects.

¹⁰ Some economists have examined this effect. For examples, see Hausman (1998), Hausman & Leonard (2002), Lancaster (1990), and Scherer (1979).

¹¹ I suspect Grinols discusses "distance consumer surplus" as a token benefit so that he does not appear to be completely biased against gambling.

Jargon

The cost-benefit jargon itself may be causing confusion among policymakers and the researchers who use the terminology. All of the following terms describing “costs” have been used in recent papers: private, social; internal, external; direct, indirect; harms, costs; intangible, tangible; external costs, externalities; pecuniary externalities, technological externalities; etc. If a standardized social cost methodology were adopted, presumably it would utilize a terminology that is easy to understand. In any case, researchers are concerned most with quantifying the costs that pathological gamblers impose on others.

Productivity losses

Employment and worker productivity may be affected by problem gambling. Some researchers argue that there is a social component of reduced labor productivity, so that this should be included in social cost estimates (Thompson, et al., 1997; Grinols & Mustard, 2001; Grinols, 2004). Reduced productivity is also an ingredient of cost-of-illness studies (Single, et al., 2001, section 4.4). Other authors have argued that such costs are internalized because the costs fall upon one of the parties of the labor contract (Walker & Barnett, 1999; Eadington, 2003; Walker, 2003). If a problem gambler is becoming less productive on the job, the cost of that falls on the employer, unless the employer cuts the worker’s wages or fires him and hires a new, more productive worker. Therefore, lost productivity is not an external, or social, cost. This is an issue that deserves much more analysis than it has received in the literature.

Harm to family members

Problem gamblers’ behavior may harm family members, there is no doubt. But some researchers have argued these costs are “internalized,” and do not belong in social cost measures (Manning, et al. 1991; Walker & Barnett, 1999). Others are less sure how to deal with the issue, but suggest that the costs are probably not internalized (Sloan, Ostermann, Picone, Conover, & Taylor, 2004, pp. 220-221). Even if

harm to family members is a social cost, how to measure it in money terms is unclear. There are other examples of harms from gambling that are not easily measured. For example, how should we measure the cost of a divorce caused by problem gambling? Rather than focusing on money measures, perhaps simply noting that family problems are a likely side effect of pathological gambling would be a better way to acknowledge this issue.

Definition of “social cost”

What constitutes a “private” and “social” cost of gambling is debated, even among economists. Walker & Barnett (1999) provided a detailed explanation of the welfare economics (utilitarian) perspective on social costs (McGowan, 1999). They argue that a social cost requires that the action reduce the total wealth in society. This implies that wealth transfers (e.g., gambling losses, bad debts, etc.) cannot be considered social costs. This “economic” perspective has been criticized because it fails to count as costs many of the negative effects that researchers and practitioners believe are critical (Hayward, 2004; Thompson, et al., 1999). At the other extreme, Thompson, et al. (1997) count as a social cost almost anything negative that can be remotely linked to gambling. The differences in opinion on these issues are illustrated in Thompson, et al. (1999) and Walker (2003).

The economics definition of social costs is based on the idea that these costs reduce the overall level of societal wealth, where “wealth” refers to overall well-being, not just material wealth (Walker & Barnett, 1999). In this sense, the economics definition fits in the context of a public health perspective, but is distinct from the COI approach. The COI approach is adapted from the substance abuse literature, and focuses on costs insofar as they impact GDP. Economists are skeptical about the use of GDP as a measure of well-being, because it does not account for things like the quality of goods, the value of leisure time, environmental quality, or other factors that may affect happiness.

Obviously, what should be counted as costs of gambling—and how to measure them—are issues that will continue to be debated for the foreseeable future. There are several distinct approaches to this issue, and a reconciliation of the different methodologies is not likely to occur soon.

Some researchers (e.g., APC, 1999; Collins & Lapsley, 2003; Single, 2003) have based their definition of social costs on that posited by Atkinson & Meade (1974) and Markandya & Pearce (1989). According to these researchers, for a cost to be “private,” the actor must have *full knowledge* about the potential costs of consuming the good. In the case of smoking, this implies that if the consumer is not “fully informed” about the harms from smoking, he underestimates the harms and chooses to smoke too much. The result is a social cost, *even if it is borne by the smoker himself*.

The Markandya & Pearce (1989) social cost definition ignores the fact that consumers are never fully informed about any of their decisions. For example, when I decide to get into my car and drive to work, I am not fully informed about the chances of being in an accident or my probability of surviving a particular accident. Furthermore, consumers are probably as likely to overestimate, as they are to underestimate the dangers from smoking, gambling, etc.¹² Following the logic of Markandya & Pearce, if a consumer *overestimates* the costs of smoking, he will smoke too *little*. The result is less smoking than is socially optimal. Yet, this possibility is not acknowledged by Markandya & Pearce (1989) or researchers who cite them. There are other problems with the Markandya & Pearce methodology, which may undermine the validity of studies based on it.

Transfers of wealth

Some researchers have argued that wealth transfers do not change the overall level of societal wealth, so they do not belong in cost-benefit calculations (NRC, 1999; Walker & Barnett, 1999; Collins &

¹² One could argue that, to the extent gamblers are uninformed about the odds of the games they play, they are more likely to overestimate their chances of winning. The majority of lottery players arguably over-estimate the chances of winning. After all, 1 in 100 million is hardly distinguishable from zero, yet lottery players relish imagining what they will do with their winnings if theirs is the lucky ticket. In the case of smoking, if there has been a significant amount of talk about (relatively harmless) second-hand smoke, people may be more likely to over-estimate the dangers from smoking.

Lapsley, 2003; Eadington, 2003; Federal Reserve Bank of Minneapolis, 2003; Single, 2003). However, others argue that transfers (bankruptcies, thefts, “bailouts,” and “abused dollars”) do belong in the equation (Markandya & Pearce, 1989; Thompson, et al., 1997; Grinols & Mustard, 2001; Grinols, 2004), because a transfer is a cost to *someone*. This is an extremely important issue, because how transfers are treated will have perhaps the largest impact on the magnitude of social cost estimates.

Some researchers base their argument that “transfers are costs” on an extremely vague concept, coined “abused dollars” by Politzer, Morrow, & Leavey (1985, p. 133):

[the] amount [of money] obtained legally and/or illegally by the pathological gambler which otherwise would have been used by the pathological gambler, his family, or his victims for other essential purposes. These abused dollars include earned income put at risk in gambling, borrowed, and/or illegally obtained dollars spent on basic needs and/or provided to the family which otherwise would have been “covered” by that fraction of earned income which was used for gambling, and borrowed and/or illegally obtained dollars for the partial payment of gambling related debts.

Researchers who cite “abused dollars” are typically staunch anti-gambling advocates (e.g., Grinols, 2004; Grinols & Mustard, 2001; Kindt, 2001). Kindt (2001, p. 31) suggests that the abused dollar cost concept “was given the actual or implied imprimatur of the *Journal [of Gambling Behavior]*.” However, the editor of the *Journal* at the time, Henry Lesieur, has explained, “I have regretted my editing and allowing publication of the Politzer et al. article on the costs of pathological gambling. It has justifiably been criticized...” (Lesieur, 2003).¹³

The problem with the concept of “abused dollars” is that using this definition, *all* money gambled could be considered “abused dollars.” The definition lacks precision, as it fails to define “essential purposes.” This type of generality leaves subsequent researchers open to interpret the concept any way they see fit. This has opened the door for advocates like Grinols and Kindt to vastly overestimate the social costs of gambling. If we hope to develop a standardized methodology for measuring the costs and benefits of gambling, vacuous concepts like “abused dollars” need to be weeded out of the literature.

¹³ Lesieur appears to regret publishing the article because he believes that many of the costs of problem gambling are not measurable.

The issue of wealth transfers, say from bad debts and bankruptcies, is an important one. Most non-economists are not satisfied with the economists' "transfer of wealth" argument. But treating transfers as social costs has its own problems, as explained by Walker (2003, pp. 165-166). In any case, measuring transfers is relatively simple, once it is determined how they should be handled in cost-benefit studies.

Crime

There have been several recent studies that examine the effects of gambling availability on crime.¹⁴ Some researchers have attempted to estimate the costs of crime, without first establishing a valid link between gambling and crime (e.g., Thompson, et al., 1997). The social costs from crime have been described by Walker & Barnett (1999) and, with an opposing perspective, Grinols & Mustard (2001). The issue of crime has obvious importance to the COI, economic, and public health perspectives on gambling.

Grinols & Mustard (2006) estimate the cost of crime attributable to casinos at \$75 per adult per year. This is an important study to consider, because it is perhaps the most comprehensive study and it has been published in a prestigious journal. As a result, this paper has the potential to spark replication studies and to be influential in policy debates.¹⁵

Crime rate data and any cost estimates based on them must be interpreted very carefully. Albanese (1985, pp. 40-41) explains, "crime statistics can be extremely misleading when they fail to account for: (1) changes in the population at risk, (2) changes in criminal opportunities, (3) changes in law enforcement resources and priorities, and (4) changes in crime elsewhere in the State."

The Grinols & Mustard paper fails to account for two of the factors mentioned by Albanese. They do not account for changes in the population at risk, nor do they account for changes in law enforcement resources and priorities. As a result, their crime rate statistics and cost estimates are unreliable.

¹⁴ For example, see Albanese (1985), Curran & Scarpitti (1991), Stokowski (1996), Stitt, Giacomassi, & Nichols (2000), and Thalheimer & Ali (2004).

¹⁵ For example, a recent state-sponsored study of casino gambling in Indiana (PolicyAnalytics, 2006) relied almost entirely on the Grinols & Mustard (2006) paper for its discussion of crime.

Grinols & Mustard report that crime in casino and non-casino counties *fell* during the sample period (2006, Figure 1, p. 3). However, crime rates in non-casino counties fell significantly more than in casino counties. They interpret this as evidence that casinos lead to more crime. Their conclusion comes with a major caveat. The crime rate (number of crimes/population) utilized by Grinols & Mustard includes the crimes committed by visitors to casino counties, but it *omits* the number of visitors from the population measure.¹⁶ (So the crime rate numerator increases while the denominator remains constant after casinos open.) They omit visitors from the population measure because county-level visitor data are not available. The result is certainly an overstatement of the crime rate in casino counties after casino openings.¹⁷

Other studies have addressed the crime issue while taking into account the visiting population, though Grinols & Mustard fail to recognize these. For example, Albanese (1985) examines crime in Atlantic City. Once visitors and changes in police resources are accounted for the correlation between casinos and crime is weak. Curran & Scarpitti (1991) also analyze Atlantic City crime. They point out that a significant amount of crime may be casino-based (i.e., occur at the casino), rather than outside in the community. Since the proportion of residents to visitors at casinos is likely to be lower than in the community overall, crime statistics in casino communities will tend to overstate the crimes committed against residents. Stokowski (1996) studies the effect of casinos on crime in three small Colorado mining towns. Her study utilizes traffic count as a (conservative) proxy for the number of visitors. Like Grinols & Mustard, she finds that crime/population rises after casinos open. But accounting for visitors, crime/vehicle count actually falls after casinos open (Stokowski, 1996, Table 3, p. 67).

Grinols & Mustard do demonstrate that some crime is attributable to the presence of casinos. More important, however, is what they *do not* show. They do not show that the crime rate increases, or that

¹⁶ The only case in which this would be the correct crime rate measure is when all casino-attributable crime was committed against residents. Obviously some crimes occur on casino grounds and/or against county visitors.

¹⁷ Grinols & Mustard (2006, p. 7, footnote 13) do attempt to consider the issue indirectly. They analyze the crime rates in counties containing national parks, and find that when population is adjusted by visitors there is not an increase in the crime rate for park counties. Then they compare national parks to Las Vegas for which visitor data are available. If Las Vegas and park visitors had identical propensities to commit crimes, then Las Vegas would need to have 59 million visitors to account for its number of larcenies in 1994. Yet Las Vegas had only 30 million visitors. This implies that casino visitors are more likely than park visitors to commit crimes.

the risk of crime to county residents increases, once the number of visitors is accounted for.¹⁸ They also fail to account for changes in law enforcement, and to distinguish between casino-based and community crimes. Considering these issues, the Grinols & Mustard casino-crime statistics are unreliable.

Aside from the above issues, the cost per crime estimates utilized by Grinols & Mustard (i.e., Miller, Cohen, & Wiersema, 1996, p. 24) deserve scrutiny. These cost per crime data include as their largest component an estimate for “quality of life” losses.¹⁹ As a result, the total estimated cost per rape, for example, is \$87,000, even though the tangible cost estimate is \$5,100. The difference (\$81,900) is presumably the quality of life cost. Obviously, crime victims experience a decrease in the quality of life, but money estimates of these losses are controversial.²⁰ Aside from this fact, Grinols & Mustard do not explain why they chose these measures of cost over others that are available. For example, the U.S. Department of Justice (Klaus, 1994) has an estimate that the average loss per rape in 1992 was \$234, far below the estimate from the Miller, et al. (1996) tangible cost estimate. This is not to suggest that one cost estimate is more appropriate than the other; the point is that Grinols & Mustard did not adequately justify why they used the estimates they did.²¹

Although Grinols & Mustard (2006) provide a comprehensive analysis of the crime rate and costs of crime attributable to casinos, there are potential problems in their study. Still, they do provide an example for other researchers to build upon.

There are, of course, other cost issues to be resolved. But this list demonstrates how there is little agreement on how to identify and measure the socioeconomic costs of gambling.

¹⁸ Another potential problem is that Grinols & Mustard do not account for casino size or volume. This would be related to the number of visitors to the casino county. Rather, they simply account for the opening year of the casinos. Although they note that casino profits and gross revenue are not available for Indian casinos, there are available proxies for casino volume. One such measure that is available is casino square footage. Accounting for casino size might give a better indication of the relationship between casinos and crime.

¹⁹ Grinols & Mustard (2006, p. 14) indicate that they use the “cost per victimization figures...” I am assuming they used the higher “total cost per victimization” figure rather than “tangible costs per victimization” (Miller, et al., 1996, p. 24).

²⁰ For a discussion, see “Uncertainty of the estimates and sensitivity analysis” (Miller, et al., 1996, pp. 19-23).

²¹ Grinols & Mustard (2006, p. 14) compare their cost estimate to that by Thompson, et al. (1996). Walker & Barnett (1999) analyze the Thompson, et al. study in detail and find that it greatly overestimates the social costs of gambling.

V. More general measurement issues

There are several general issues that make the measurement of the benefits and costs of gambling extremely complicated. Although some studies have acknowledged these issues, there is currently no ideal way (that I am aware of) to handle them.

Counterfactual scenario

The key to understanding the economic benefits of gambling is the counterfactual scenario (Collins & Lapsley, 2003; Eadington, 2003; Grinols, 2004). What would the resources used to build casinos, racetracks, etc., otherwise be used for? Does a new casino reduce unemployment, or simply shift jobs among industries? What about gambling industry revenues? Are these merely shifted away from other industries? Is it possible that the shifting of resources within or among industries can be beneficial for efficiency reasons? A consideration of market economics and a review of empirical evidence can be informative, but knowing the counterfactual scenario and being able to measure the difference is guesswork.

Comorbidity

Comorbidity remains one of the biggest challenges to researchers interested in measuring the effects of gambling on society (Shaffer, Hall, & Vander Bilt, 1997; Walker & Barnett, 1999). In the early literature, few authors even considered the implications of multiple disorders; they simply attributed the full costs to the gambling disorder, even when other problematic behaviors, such as alcoholism, were clearly present (e.g., Thompson, et al., 1997; Grinols & Mustard, 2001; Grinols, 2004). A mechanism is needed to allocate the harm among coexisting disorders. As with the counterfactual scenario, dealing with comorbidity in estimating the costs of gambling is guesswork.

Government expenditures and social costs

Even when particular government-paid costs of gambling are agreed to be “social costs,” the measurement of them may be tricky. For example, most researchers count government expenditures relating to the treatment of problem gambling as social costs (Walker & Barnett, 1999; Collins & Lapsley, 2003; Eadington, 2003; Single, 2003). In fact, such expenditures are a primary focus of COI studies. The magnitude of these social costs in a country depends critically on the level of treatment-related expenditures by government. This makes the comparison of social costs across countries difficult. For example, if one country increases its expenditures on problem gambling treatment, according to most studies, the social costs of gambling in that country increase, even if the number of problem gamblers, or the severity of their problematic behaviors, decrease. A country whose government spends nothing to deal with problem gambling may have a significantly lower social cost, *ceteris paribus*.²²

Social cost studies that simply use government expenditures as measure of social costs are problematic. Yet, there is no obviously better way to handle these costs. One could argue that government expenditures should be handled in a fundamentally different way, since they may be tied more directly to politics than to the level of problem gambling in the country. Even so, the level of government spending can provide useful information to researchers interested in studying the cost-effectiveness of different treatment options.

Surveys and fungible budgets

A problem related to “abused dollars,” is that many researchers rely on survey data to develop their social cost estimates. In many cases, these are surveys of problem gamblers or members of Gamblers Anonymous (e.g., Thompson, et al., 1997; Grinols & Mustard, 2001). Diagnostic/screening instruments like SOGS and DSM-IV also commonly ask how the person financed his/her gambling.

²² Alternatively, suppose one country compensates pathological gamblers 150% of their treatment costs. Then the social costs of gambling in this country would be over-estimated.

Extrapolating from the experience of the most serious problem gamblers, to the general population, is inappropriate (Walker & Barnett, 1999). But a more fundamental problem results when social cost estimates are based on survey responses from problem gamblers. This is because budgets are fungible. It is difficult for an individual to unequivocally specify the source of money lost gambling (e.g., paycheck, credit card, borrowing from friends or family). People may have several sources of income or money; they also have many types of consumption spending. A person's financial problems may not be due solely to problem gambling.²³ For example, suppose a problem gambler buys a car beyond what his budget would allow, even in the absence of his gambling. To what extent are financial woes due to gambling or to the expensive car? This issue has not been dealt with effectively in the literature, but it is very important.

Are flawed data better than no data?

Policymakers and the press are very interested in gambling research, especially related to the social costs and benefits of gambling, and pathological gambling. Simple measures, like money values, or prevalence estimates for pathological gambling, are easily understood by laymen. When researchers provide these data, consumers of the data are not likely to be aware of the controversies involved in creating the data. In areas where research is still relatively primitive, perhaps no data would be better than flawed data, in terms of policymakers and the press. Yet for researchers, such estimates are important for other researchers to replicate and criticize. This is part of the process of scientific development. If policymakers do wish to utilize whatever data are available, perhaps researchers should do a better job at highlighting the potential flaws or controversies in their research.

²³ Obviously there will be cases where gambling is the clear problem. But it is doubtful that irresponsible gamblers are otherwise financially responsible.

VI. Conclusion

There are so many tedious details about how to measure the costs and benefits of gambling. Variation, both in terms of what to measure and how to measure it, partly account for the huge variation in social cost and benefit estimates. Although most critics of the “economic approach” to estimating the effects of gambling probably believe that it underestimates the net costs of gambling, the opposite may very well be true. So far, cost-benefit analyses have not effectively measured the consumers’ benefits from gambling.

It is easy to sympathize with those who discount the value of money estimates of costs and benefits, and instead focus on net harm reduction (or net benefit maximization). Since most gamblers do not have problems, my economics background and belief in consumer sovereignty lead me to argue that gambling should be an option for people. For those who do develop problems, we should work to minimize the harms they face. Perhaps this is the best we can do at this point.

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