October 12, 2006

By Facsimile 914 949 7559

Siobhan O'Kane
Environmental Planner
AKRF Engineering, P.C.
34 South Broadway
Suite 314
White Plains, NY 10601

     Re: Seneca County's Response to AKRF's Request for Information
              Concerning the Cayuga Nation's Application for Placement of Certain
              Lands Located in Seneca County into Trust

Dear Ms. O'Kane:

     We are counsel to Seneca County, and this letter is provided in response to the information requested by AKRF in its correspondence dated August 15, 2006 (as well as earlier correspondence including a letter dated June 29, 2006) concerning the Cayuga Nation's (hereinafter "the Nation") trust application (the "Trust Application").

     As we understand it, the information sought by AKRF is to be used by the Bureau of Indian Affairs ("BIA") in order to assess potential effects to Seneca County from the granting of the Trust Application, including effects to police services, as well as effects to emergency and other services provided by Seneca County. Specifically, your firm on behalf of BIA has requested information regarding police and other services provided to those properties located in Seneca County that are subject to the Cayuga Nation Trust Application (hereinafter referred to as the "Seneca Properties") to gauge the impacts that may be expected from granting the Trust Application.

A.   Background

     Preliminarily, we note that a few of the addresses cited in your letters as encompassing the Seneca Properties may be incorrect. The first address so noted is 1347 Route 414; we believe that the address is meant to refer to 1343 Route 414 (including the Deerhead Inn Property). In addition, the address identified for Route 89 in AKRF's previous correspondence also appears to be incorrect, as the address listed for Route 89 in AKRF's previous correspondence is 2252 Route 89, when it is believed that this is intended to identify 2552 Route 89.

     We also note that information regarding the current levels of service provided to the Seneca Properties, including 911 calls, will not provide an accurate assessment of potential effects on community services, including on police, fire protection and other services, should the Trust Application be granted. In short, the level of service currently provided by the County to

the Seneca Properties given the current uses of same does not provide an accurate assessment of potential effects of granting of the Trust Application. Thus, if the Trust Application is granted, the Seneca Properties (based on statements in the Trust Application) will be developed with gaming and other more intense uses (for example development would likely include retail, etc.) that will result in a material increase in the level of emergency, police and other County services needed to serve such properties, and needed to serve surrounding property in the County as a whole. Further, the ramifications of granting the Trust Application including increased demands on County services would not only impact the Seneca Properties and the immediate area around them, but also generally impact Seneca County residents, as more specifically identified below.

Set forth below is an analysis of current conditions associated with the County's providing of such services to the Seneca Properties. In addition, based on the nature of the development to occur on the Seneca Properties, we have outlined the anticipated demand for law enforcement, emergency and other County services associated with the granting of the Trust Application.

B.   Current Demands for Service Associated With the Seneca Properties

Enclosed as Exhibit "A" hereto is a listing of certain calls for service for the Seneca Properties (based on the corrected addresses above), including a breakdown of calls for service based upon the category of the complaint (harassment, larceny, etc.).

In addition, based on a review by the Seneca County Sheriff's Office of its records and other information, the following observations are made with regard to the Seneca Properties and current calls for same: The parcel located at 3149 Garden Street Extension currently encompasses a Nation operated store and gasoline station. According to available information, Garden Street Extension is currently impacted by unusually heavy traffic volume, as well as an unusually high number of traffic incidents. Similarly, the property located on Route 89 is also impacted by higher than normal traffic volume and traffic incidents. We will provide additional information when our fact gathering is complete, but Seneca County Sheriff Connolly reports that the increased number of traffic incidents (including accidents) on these two roads associated with Seneca Properties is due in part to the fact that the roadways in question are narrow and are often used by large tractor trailer vehicles including for delivery of petroleum products to the Nation gas station and convenience store located on Garden Street Extension.

Attached as Exhibit "B" is a listing of personnel and equipment devoted by the Seneca County Sheriff's Office to current patrols for Seneca County, including the Seneca Properties. We should note (as identified in Exhibit "B") that Seneca County encompasses approximately 330 square miles, and has a population of 33,000 persons. Based upon the Seneca County Sheriff's Office's review of its records, it has concluded that the number of incidents including calls for service at the Seneca Properties is higher than the calls for service at other similar properties in the County. Exhibit "B" also contains Sheriff Connolly's conservative estimates of

what will minimally be required to service the Seneca Properties should the Trust Application be granted and more intense uses (i.e., gaming) are undertaken. This issue will be discussed in more detail below.

With respect to other emergency services (fire and ambulance), we note that Seneca County is served by volunteer fire and ambulance services, including by the North Seneca Ambulance Corps, as well as by local volunteer fire departments, including the Red Jacket Fire Department. The contact persons for the Red Jacket Fire Department and North Seneca Ambulance include Chief Steve Farnsworth for the Red Jacket Fire Department, as well as John Wendt for the North Seneca Ambulance. (The phone numbers for Chief Farnsworth and John Wendt are respectively, 568-5129 and 539-5002, each with area code 315.) We strongly urge that these individuals be contacted, as Seneca County is not in a position to provide information regarding calls for services as they relate to ambulance and fire, but there can be little doubt that effects to ambulance and emergency services would be similar to the effects to police and other services should the Trust Applications be granted.[1]

In addition, the Seneca County Office of Emergency Services provides emergency support and command post operations in the event of a major fire and hazardous materials spills, etc. The Seneca County Office of Emergency Services is staffed by Director Charles McCann and a full time Deputy Director. As indicated, the County Office of Emergency Services is responsible for operating command posts in the event of emergencies or disasters, as well as providing other resources needed to address releases of hazardous materials, etc. It is expected that the County Office of Emergency Services would be similarly affected by the granting of the Trust Application, and that there would be a material increase in demand for such services.

C.   Available Information, Including Several Comprehensive Studies Demonstrate that the Demand for Policing and other County Services will Materially Increase in the Event that the Trust Application is Granted

By its Trust Application and through statements to the media, the Nation has clearly stated its intent to conduct gaming on the Seneca Properties. (Attached hereto as Exhibit "C" is a copy of newspaper articles discussing same). For the reasons more specifically identified in scoping comments provided by Cayuga and Seneca Counties in a memorandum dated March 14, 2006 (which we incorporate herein by reference and provide an extra copy to you, as Exhibit "D") as well as in a letter dated February 10, 2006 submitted by Harris Beach on behalf of the Counties (Exhibit "E"), any impact or effect analysis must take into account that the Seneca Properties will be developed in such a manner as to provide for gaming and other high density uses or operations (for example, in addition to gaming, increased retail operations etc). To the

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[1] We also note that, at least in some part certain local volunteer services, including fire department and ambulance services, are offset by legal gaming sponsored by such organizations. To the extent that the Seneca Properties are developed to include gaming activities, this may adversely affect the ability of these organizations to offset the cost of equipment and other services.

extent that the Trust Application does not specifically indicate what development will be undertaken on certain vacant parcels, based upon the actions of the Nation and statements made by Nation representatives including in the Trust Application, there is every reason to believe that more intense uses including those associated with gaming will be developed on those parcels as well.

According to Seneca County Sheriff Leo Connolly, the properties which are the subject of the Trust Application already account for a higher than normal number of calls for service compared to other properties in Seneca County. The uncontroverted facts gathered by Seneca County, including by the Sheriff's Office contradicts any allegation in the Trust Application which indicates that County services are not currently being provided to the Seneca Properties; indeed, nothing could be further from the truth. In the event the Trust Application is granted, it is likely (if not almost certain) that gaming activities, increased retail and potential commercial operations will be undertaken at each of the Seneca Properties. Given the already increased calls for service at the Seneca Properties, and the information available as to the effect of higher density uses and retail operations on calls for policing and other services, Seneca County has every reason to believe that there will be a substantial increase in calls for police, ambulance and other services at the Seneca Properties should the Applications be granted.

The concerns expressed by Sheriff Connolly and other emergency service providers as to increased demands for such services is further confirmed by studies and direct experience with gaming operations across the United States, including as close as Madison County, which demonstrate that crime increases materially on a County-wide basis when gaming facilities begin operating, particularly when compared to areas that do not allow gaming. Thus, as set forth in more detail in the documentation provided as part of Exhibit "F," several studies have concluded that the impact of gaming on calls for police service have increased the demands for such service substantially. In particular, studies conclude that person crimes such as robbery, assault increase materially with the advent of gaming. Further, the effects of increased criminal activity are felt throughout the area where casinos or gaming operations are developed, and thus would not be limited to the Seneca Properties and those in close proximity, but would undoubtedly adversely effect the County as a whole. Moreover, because taxes would not be paid by the Nation on the properties taken into trust, the costs associated with increased services will be disproportionately borne by other County residents (those not residing on the Seneca Properties).

Furthermore, as set forth in detail in the scoping comments previously provided by this office on behalf of Seneca and Cayuga Counties, the likely traffic impact from the taking of the Seneca Properties into Trust should also be analyzed. There is every reason to believe that traffic impacts will increase substantially with the development of gaming and retail uses, resulting in increased demands for police and other services related to traffic, speed control and accidents. Indeed, when gaming activities were previously conducted in Seneca County, increases in traffic impacts therefrom were observed.

Thus, as previously indicated in Seneca County's scoping comments, it urges that in conjunction with BIA's review of the Trust Application, that payments be required from the Nation as a condition precedent to the granting of same, so that the Nation bears its fair share of County services that will be required upon the development of the Seneca Properties. As set forth in the Seneca County scoping comments, a mechanism should be put in place whereby the Nation would be required to pay for traffic improvements, etc. associated with the taking the properties into Trust, and the likely ramifications of same including increased traffic volume on roads associated with the Seneca Properties and the uses of same for gaming and other high density uses.

Indeed, as set forth more specifically in Exhibit "B" attached hereto, the Seneca County Sheriff's Office conservatively estimates that should the Trust Application be granted, an additional ten full-time deputy sheriffs would be required as well as a concomitant increase in the number of vehicles (ten new police vehicles) necessary to properly equip such new personnel that would have to be devoted to the Seneca Properties and the areas in proximity thereto. At least two supervisory personnel (sergeants) would also need to be hired under the circumstances. Further, emergency and other services would undoubtedly be similarly affected and would require similar increases in staff and equipment in order to serve the Seneca Properties if the Trust Application is granted.

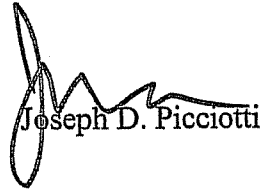D.   Non-Economic Adverse Effects of Taking the Properties into Trust

As indicated previously, in addition to the adverse effects that the granting of the Trust Application would have on Seneca County's provision of police, fire and other emergency services, the ability of emergency responders including police, to undertake their responsibilities would be restricted or compromised in the event the Trust Application was granted. For example, as discussed in more detail in the March 14, 2006 submission, the ability of the Seneca County Sheriff's Office to maintain order and enforce the law so as to protect persons and property would seriously be hampered by the status of the Seneca Properties should they be taken into Trust.

Similarly, the provision of other emergency services would also be compromised by the status of the Seneca Properties should they be taken into Trust, including an inability to enforce applicable regulations and procedures related to public health and welfare. For example, buildings and other structures located on the Seneca Properties would not be required to meet fire codes, and be equipped in appropriate safety equipment etc., and there would be no mechanism in place to enable local officials to ensure that such regulations were followed. The ramifications of the Nation's failure to comply with such regulations, including the inability to enforce same will adversely affect not only the Seneca Properties, but those persons and property in proximity to the Seneca Properties. See, the scoping comments submitted by the Seneca and Cayuga Counties by Memorandum dated March 14, 2006.

Please do not hesitate to contact us if you have any questions.

Sincerely,

Joseph D. Picciotti

JDP:cds
Enclosures
cc: Ashley Ley
    Sheriff Leo T. Connolly
    Steven Getman, Esq
    Brian Laudadio, Esq.

Exhibit A

3149 Garden Street Ext.

	2001	2002	2003	2004	2005	2006
911 hang up						
Added Patrol	2		1			
Alarm						
Ambulance						
Bad checks						
Burglary/Att burglary	1	1		1		
Criminal Mischief	2		1	2		
Disorderly Conduct	1		1	1		
Domestic/Fight		1				
Fire works						
Gas spill/fire		2				
Harassment	1	1			1	
Larceny						
Found/Lost property						
MVA			1			
Misc.		2				1
Suspicious person		1				
Vehicle						
Trespass						
V & T	1					

2252 Route 89   (incorrect address) I believe they mean 2552 Route 89

	2001	2002	2003	2004	2005	2006
911 hang up			1			1
Added Patrol	7				1	
Alarm		4	2	4	4	
Ambulance					1	
Bad checks		1	1	1		
Bomb Threat						
Burglary/Att burglary						
Criminal Mischief	1	1	1			
Disorderly Conduct						
Domestic/Fight						
Fire works		1			1	
Gas spill/fire						
Harassment	3	4	2	1	1	3
Juvenile	2	2				1
Larceny	12	12	5	4	12	1
Found/Lost property	5	2	2	8	12	6
MVA	1	1			1	
Misc.	1					
Robbery	1					
Suspicious person	2		1	1	1	
Vehicle						
Traffic Hazard	1				4	2
Trespass						
V & T						

1347 Route 414   (incorrect address) I do not know what they are looking for.

2177 Route 5 & 20

	2001	2002	2003	2004	2005	2006
911 hang up			2			
Added Patrol	8	2	1	4	7	2
Alarm			1	2	1	1
Ambulance						
Bad checks						
Bomb Threat		1			1	
Burglary/Att burglary						
Criminal Mischief						
Disorderly Conduct						
Domestic/Fight						
Fire works	1					1
Gas spill/fire					2	
Harassment		2	1		2	2
Juvenile	1					
Larceny		2	1	3	2	1
Found/Lost property		2	1		1	
MVA	2	1			1	1
Misc.		1			1	
Robbery						
Suspicious person						
Vehicle						
Traffic Hazard						
Trespass						
V & T						

Nearby Business – Deerhead Inn

	2001	2002	2003	2004	2005	2006
911 hang up						
Added Patrol						
Alarm		2	1	1	1	
Ambulance						
Bad checks						
Bomb Threat						
Burglary/Att burglary						
Criminal Mischief						
Disorderly Conduct						
Domestic/Fight		1		1		
Fire works						
Gas spill/fire						
Harassment		2				
Juvenile						
Larceny		1	1	1		
Found/Lost property						
MVA						
Misc.						
Robbery						
Suspicious person						
Vehicle						
Traffic Hazard						
Trespass						
V & T						

Exhibit B

Joseph D. Picciotti

Subject: FW: AKRF Response

Joe...Currently I have the following personnel for Road Patrol in Seneca County:
1. 1 Lieutenant
2. 5 Sergeants
3. 13 Full Time Deputies
4. 7 Part Time Deputies
Seneca County is 330 square miles and has a population of 33,000.

The previous submitted material indicated that the response incidence at these locations are much higher than the surrounding area now. Should the land be placed in trust and gaming be permitted then the problems would grow exponentially. I would require at a minimum the following:
1. 2 Full time deputy positions. Each post requires a minimum of a 5.1 person multiplier to fill all shifts and provide for time off. Therefore, at the very least 10 new deputies would be needed.
2. At least 3 new vehicles would be needed to supply these additional personnel.

As far as Emergency Services are concerned, this area is covered by the North Seneca Ambulance Corps. They have 3 fully functional emergency vehicles and at least one more would be needed to handle the additional volume. They are manned by volunteers.

If this does not suffice let me know and I will try to get you any additional information you may need.

1

Joseph D. Picciotti

To: Joseph D. Picciotti

Subject: Required Supervisory Staff- Seneca County Sheriff's Office

I am informed by law enforcement personnel that in addition to the hiring of 10 full time equivalent deputy sheriffs (associated with the granting of the trust applications), that at least 2 supervisory personnel (sergeants) would also have to be hired.

Exhibit C

syracuse.com's Printer-Friendly Page
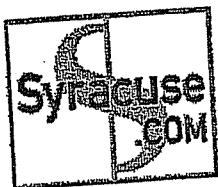
The Post-Standard

Cayugas say they'll reopen gaming

Lawter says the Cayuga Indians might also open a full-scale casino

Wednesday, December 07, 2005

By Scott Rapp
Staff writer

The New York Cayuga Indians will reopen their gaming halls in Cayuga and Seneca counties whether or not they win federal approval to put their land into trust, a tribe lawyer said Tuesday.

Daniel French also did not rule out the possibility that the Cayugas will try to open a full- scale Class III casino in their homeland.

"The bottom line is that the National Indian Gaming Commission has already authorized gaming on Cayuga lands. The nation closed the (gaming halls) in deference to the counties but could reopen them without the trust applications," said French, of Syracuse.

Both counties and the state just received copies of the nation's trust application to the U.S. Department of Interior and have 30 days to file their initial response. The review process can take 12 to 18 months, he said.

French did not say when the two gaming halls would reopen.

Nedra Darling of the federal Bureau of Indian Affairs did not return phone calls Tuesday.

Cayuga and Seneca counties are expected to seek more time to respond and Saleem Cheeks, a spokesman for Gov. George Pataki, said the state is "reviewing the information."

French said the Cayugas were not trying "to pull a fast one" when they omitted mentioning gaming as an intended land use in their trust application.

"We don't specifically say gaming, but there should be no doubt that the Cayuga Nation intends to operate Class II gaming in both Seneca and Cayuga counties and looks forward to resumption of their activities," said French.

However, Seneca County Attorney Steven Getman questioned the tribe's motive for excluding its plan to reopen its video gaming halls in the town of Seneca Falls and Union Springs in the trust application.

"It appears that they're telling the federal government something completely different than what they're telling the public and this would lead me to question whether they aren't trying to unfairly skirt the federal laws related to gambling," Getman said.

French said the Cayugas did not have to include their gambling plans in the application because both gaming halls were in operation when they asked to put their real estate holdings in trust several months ago. He said the tribe will follow all federal procedures and regulations in the

trust application process.

Trust land is owned by the federal government but reserved for the exclusive use of an Indian tribe. Tribes do not have to pay taxes or follow local laws on trust land but must obtain federal approval to sell, lease or develop the property.

Leaders in both counties have said they would oppose the federal government allowing the Cayugas to put their land into trust. The tribe owns several parcels, including two combination convenience stores and gas stations, in Union Springs and the town of Seneca Falls. The convenience stores remain open in both locations.

The Cayugas closed both of their gaming halls shortly after a federal judge ruled in October that the village of Union Springs could enforce its local laws and shutter the nation's video gaming hall on Route 90.

That ruling followed the 2nd Circuit U.S. Court of Appeals June decision to dismiss the Cayuga Nation's land claim to some 64,000 acres of ancestral land in both counties. The court ruled that the Cayugas and the Seneca-Cayuga Tribe of Oklahoma, the co-defendant, waited too long to reclaim the land and also voided the $247.9 million judgment awarded to them in 2001.

Getman said federal guidelines call for a more stringent review of trust applications that include gaming plans. He speculated that the Cayugas were trying to circumvent that tougher review by omitting their gambling intentions, but French said there was no attempt to deceive anyone.

"There should be no confusion ... that the nation intends to have gaming on its lands and allegations of deception are misplaced, and the counties ought to concentrate on meaningful negotiations over what the Cayuga Nation's trust lands ultimately encompass," he said.

"Seneca and Cayuga counties have an opportunity to negotiate now with the Cayuga Nation. This opportunity won't last forever," he added.

Meanwhile, both counties are expected to ask the Interior Department for more time to respond to the Cayugas' trust application, spokesmen for both counties said.

"Madison and Oneida counties got an additional 60 days. I would think we would ask for the same," said Cayuga County Legislature Chairman Herbert Marshall.

In late October, Madison and Oneida counties received 60-day extensions from the federal government to respond to the New York Oneidas' request to take more than 17,000 acres off the tax rolls in both of those counties.

Scott Rapp can be reached at 253-7316 or srapp@syracuse.com

Exhibit G

Exhibit H

auburnpub.com

71
forecast...

TUESDAY OCTOBER 4, 2005 Last modified: *Tuesday, October 4, 2005 10:30 AM EDT*

Seneca Falls bingo hall closes down

By Linda Ober / The Citizen

Seneca County residents looking to gamble are out of luck.

LakeSide Entertainment 2, a gaming facility of the Cayuga Nation, closed its doors indefinitely Friday night, less than a week after the passage of a Seneca County local law that declared illegal gaming a public nuisance.

The law also authorized the county attorney and sheriff "to go to court in order to close any illegal facility and confiscate any illegal machines," according to Seneca County Attorney Steven Getman. It was passed unanimously by all members of the board of supervisors present, Getman said.

Dan French, an attorney who represents the Cayuga Nation, said the nation is taking some time to discuss its stance on gaming before deciding on the future of the bingo hall, located on Route 89.

"This just came at a particularly bad moment for the nation," French said, noting that collective decisions are difficult to make now because the nation is in the midst of leadership disputes.

"The nation needs to work independently on issues of gaming. There is not a consensus by any means whether or not to have gaming facilities in the first place."

Should the facility reopen, the matter could end up in federal court, French added.

French said that the nation is confident its bingo hall is legal. It is recognized by the National Indian Gaming Commission and is allowed under the federal Indian Gaming Regulatory Act, he said.

But county officials don't believe the nation's arguments hold weight.

"Seneca County has always maintained that federal law only applies on property that is sovereign Indian country," Getman said,

noting that the county doesn't believe the Cayugas' property fits into that category. As such, it is subject to local and state law, Getman said.

Seneca County Board of Supervisors Chairman Robert Shipley Jr. did not return phone calls Monday night.

During the spring, the Cayuga Nation submitted applications to the federal government to have its lands taken into trust, which French said would then make the county's laws obsolete. The Bureau of Indian Affairs has told the nation that its application is moving forward, he added.

The county law, which had been discussed by the board of supervisors for several months and was the topic of a Sept. 13 public hearing, will be final upon filing with the secretary of state, Getman said.

According to Getman, Seneca County Sheriff Leo Connolly said Cayuga representatives told him bingo machines were removed from the facility to avoid closure. But French said the Cayuga Nation asked Bally's, the company it contracts with, to remove the machines so they could be used at other locations while the nation's council discusses the issue.

Signs on the closed facility's doors direct players to the nation's Union Springs location, which remains open.

Staff writer Linda Ober can be reached at 253-5311 ext. 237 or linda.ober@lee.net

Close Window

TUESDAY OCTOBER 11, 2005 Last modified: *Tuesday, October 11, 2005 10:56 AM EDT*

Union Springs bingo hall closed

By Linda Ober / The Citizen

The village of Union Springs has expressed itself loud and clear:

B-I-N-G-"NO."

Pressured by village officials, the Cayuga Nation's bingo hall on Route 90 closed its doors Monday morning, just days after the tribe ceased operations at its Seneca County gaming hall. A sign taped to the glass door of the gaming hall told customers the facility was temporarily closed and provided a phone number for more information.

"The nation was given the offer to close voluntarily or tomorrow or Wednesday we would shut them down," said Union Springs Mayor Ed Trufant.

Union Springs' ultimatum came after U.S. District Court Judge David Hurd lifted an injunction last week that had originally allowed the hall to open in May 2004. Hurd's injunction was issued prior to the Supreme Court ruling (City of Sherrill v. Oneida Indian Nation) that tribes could not automatically claim land sovereign; they had to apply for property to be taken into trust through the U.S. Department of Interior.

Cayuga County Legislature Chairman Herb Marshall believed the Cayugas' decision to close their gaming facilities in Seneca and Cayuga counties is a reaction to the Sherrill ruling.

"Under the present circumstances, the hall was certainly illegal, and I think Union Springs probably had no choice but to close it," Marshall said. According to Trufant, Union Springs has had anti-gaming laws since the 1950s. Legislator George Fearon, R-Springport, was pleased with the decision, especially because of what he sees as the negative social consequences of gaming.

"I'm not a big fan of gaming – period," Fearon said.

Clint Halftown, the tribe's federally-recognized government representative, sent a letter to nation members Monday explaining the

Exhibit E

tribe's decision.

"While we can go to court to fight enforcement of these laws," Halftown wrote, "I think that the best thing for the Nation to do at this point in time is to temporarily close Union Springs and continue to pursue our applications to have our land taken into trust."

Dan French, an attorney that represents the Cayuga Nation, said that though the tribe believes it would prevail in court, it is confident that its trust application will be granted. If accepted, the nation could reopen its facilities without a problem, French said.

Halftown said the nation needs time to discuss its gaming future, which is not a shared vision throughout the tribe.

Attorney Joseph Heath represents five Cayugas including the condoled chiefs, Bear Clan member Sam George and Heron Clan member William "Chuck" Jacobs, that are anti-gaming, except for traditional games.

"It puts them in a difficult situation," Heath said. "They're not in favor of gambling, but they're not in favor of this local effort to exercise jurisdiction diminishing the nation's sovereignty."

The Seneca County bingo hall closed its doors indefinitely Friday, Sept. 30, less than a week after the passage of a county local law that declared illegal gaming a public nuisance.

Heath said that Seneca County's law may be subject to a federal court challenge and that the Union Springs laws may also be challengeable.

Heath hopes local county and town officials will negotiate with tribal members because of the tribe's pending land-in-trust application.

Staff writer Amaris Elliott-Engel contributed to this report.

Linda Ober can be reached at

253-5311 ext. 245.

Close Window

Exhibit D
Previously provided (including March 14, 2006
comment memorandum and its enclosures)

Exhibit E
Previously provided (including February 10, 2006
comment letter and its enclosures)

Exhibit F

9 of 134 DOCUMENTS

Review of Economics & Statistics

February, 2006

SECTION: Pg. 28

LENGTH: 13685 words

HEADLINE: CASINOS, CRIME, AND COMMUNITY COSTS

BYLINE: Earl L. Grinols and David B. Mustard*

BODY:
We examine the relationship between casinos and crime using county-level data for the United States between 1977 and 1996. Casinos were nonexistent outside Nevada before 1978, and expanded to many other states during our sample period. Most factors that reduce crime occur before or shortly after a casino opens, whereas those that increase crime, including problem and pathological gambling, occur over time. The results suggest that the effect on crime is low shortly after a casino opens, and grows over time. Roughly 8% of crime in casino counties in 1996 was attributable to casinos, costing the average adult $75 per year.

I. Introduction

PRIOR to 1978, there were no casinos in the United States outside Nevada. Since 1990, casinos have expanded to the point where the vast majority of Americans now have relatively easy access to one. This paper utilizes the natural experiment created by casino openings to examine how casinos affect crime. There are many reasons why understanding this link is particularly valuable. First, the casino industry has grown rapidly in the last decade and has become one of the most controversial and influential industries. Commercial casino revenues increased 203% from $8.7 billion to $26.3 billion between 1990 and 2000. Including Class III American Indian casinos, revenues were $38.8 billion, or $200 per adult, in 2001. Casino industry revenues are comparable to those of the cigarette market, and all forms of gambling total more than seven times the amount spent on theater tickets. n1 From 1982 to 2000, GDP increased 201% while casino revenues increased more than 660%. This rapid expansion generated extensive debate about the impact of casinos on many social, economic, and political issues. n2

* Baylor University, and Terry College of Business, University of Georgia and the Institute for the Study of Labor, respectively.

n1 1997 cigarette sales were $45 billion. 2002 theater ticket and gambling revenues were $9.3 and $68.7 billion.

n2 Kindt (1994), Grinols (1996), Henriksson (1996), and Grinols and Omorov (1996) discussed a number of these.

Second, the casino industry has become a major lobbying presence. Between 1992 and 1997, $100 million was paid in lobbying fees and donations to state legislators (Harvard Medical School, 1997). Concerns were sufficiently pronounced that the U.S. Congress established the National Gambling Impact Study Commission (NGISC) in 1996 to study casinos exhaustively. Its final report called for additional research about the effects of casinos and a moratorium on further expansion.

Third, research suggests that on a national basis casino gambling generates externality costs in the range of $40 billion annually, n3 and crime is one of the biggest components of these social costs.

CASINOS, CRIME, AND COMMUNITY COSTS Review of Economics & Statistics

n3 See, for example, Grinols and Mustard (2001, p. 155) and Grinols (2004, p. 170).

Last and most important, in spite of the substantial attention devoted to the casino-crime link, there is a paucity of convincing research about it. Economists have been virtually silent, and studies from other disciplines typically exhibit many fundamental weaknesses. First, no study has examined the intertemporal effect of casinos, which we contend is essential to understanding the relationship. Second, nearly every study used small samples, most frequently Las Vegas, Atlantic City, Reno, and Deadwood (Albanese, 1985; Lee & Chelius, 1989; Friedman, Hakim, & Weinblatt, 1989; Buck, Hakim, & Spiegel, 1991; Chiricos, 1994; Margolis, 1997) or Wisconsin (Thompson, Gazel, & Rickman, 1996a; Gazel, Rickman, & Thompson, 2001), or a selection of a handful of casino markets (Albanese, 1999). Four of these studies conclude that casinos increase crime, two argue that there is no effect, and one maintains that Florida regions with casinos have lower crime rates than selected Florida tourist cities if visitors are included in the population base denominator.

Another problem with the existing research is that some studies (Albanese, 1999; Hsing, 1996) reached conclusions about crime rates without actually examining crime rates. Instead of analyzing offenses, they used arrests, but did not discuss the problems inherent in using arrest rates to infer anything definitive about crime rates.

A fourth criticism is that most studies are subject to substantial omitted variable bias because they rarely controlled for variables that affect crime. Margolis (1997), Florida Department of Law Enforcement (1994), and Florida Sheriffs Association (1994) included no control variables. Nearly all of the other studies control for very few factors.

Fifth, the literature has generally neglected discussing the theoretical links between casinos and crime, as Miller and Schwartz (1998) document in detail.

Last, many studies were agenda-driven, conducted or funded by either progambling or law enforcement organizations. Nelson, Erickson, and Langan (1996), Margolis (1997) and Albanese (1999) were funded by explicitly progambling groups. As expected, they concluded that gambling had no impact on crime. The Florida Department of Law Enforcement (1994) and Florida Sheriffs Association (1994), which both opposed casinos, concluded that crime and drunk driving increased in Atlantic City and Gulfport, MS, as a result of casinos.

The General Accounting Office (GAO) and NGISC concluded that definitive conclusions cannot yet be reached about the casino-crime link. According to the GAO (2000, p. 35), "In general, existing data were not sufficient to quantify or define the relationship between gambling and crime . . . . Although numerous studies have explored the relationship between gambling and crime, the reliability of many of these studies is questionable." This paper contributes to the literature on this important issue by addressing each of the above limitations.

The paper is organized as follows. Section II explains the data we use. Section III analyzes the theoretical links between casinos and crime, and section IV outlines our estimation strategy. Section V discusses our basic empirical results, and section VI extends the results to border counties. Section VII concludes. We find that crime increases over time in casino counties, and that casinos do not just shift crime from neighboring regions, but create crime. We estimate the crime-related social costs in casino counties at approximately $75 dollars per adult per year.

II. Data

Our sample covers all 3,165 U.S. counties from 1977 to 1996. The Federal Bureau of Investigation's (FBI) Uniform Crime Report n4 provided the number of arrests and offenses for the seven FBI Index I offenses: aggravated assault, rape, robbery, murder, larceny, burglary, and auto theft. n5 With the exception of Alaska, the county jurisdictions remained unchanged over our sample period.

n4 U.S. Department of Justice, FBI, *Uniform Crime Reports: County-Level Detailed Arrest and Offenses Data, 1977-1996*, Washington, DC: U.S. Department of Justice, FBI; Ann Arbor, MI: Inter-university Consortium for Political and Social Research (ICPSR, distributor).

n5 The definitions are listed in *Crime in the United States: 1993* (U.S. Department of Justice, Federal Bureau of Investigation), Appendix H, pp. 380-381.

We used U.S. Census Bureau data for demographic control variables, including population density per square mile, total county population, and population distributions by race, age, and sex. n6 The Regional Economic Information System, of the Bureau of Commerce, provided data on income, unemployment, income maintenance transfers, and retirement. n7

n6 ICPSR (8384): "Intercensal Estimates of the Population of Counties by Age, Sex and Race (U.S.): 1970–80, "U.S. Department of Commerce, Bureau of the Census, Winter 1985, ICPSR, Ann Arbor, MI 48106. "Intercensal Estimates of the Population of Counties by Age, Sex and Race: 1970–1980 Tape Technical Documentation," U.S. Bureau of the Census, Current Pop. Reports, Series P–23, 103, "Methodology for Experimental Estimates of the Population of Counties by Age and Sex: July 1, 1975." U.S. Bureau of the Census, Census of Population, 1980: "County Population by Age, Sex, Race and Spanish Origin" (preliminary OMB–consistent modified race).

n7 Income maintenance includes Supplemental Security Insurance (SSI), Aid to Families with Dependent Children (AFDC), food stamps, and other income maintenance (which includes general assistance, emergency assistance, refugee assistance, foster home care payments, earned income tax credits, and energy assistance). Unemployment insurance benefits include state unemployment insurance compensation, Unemployment Compensation for Federal Civilian Employees (UCFE), Unemployment for Railroad Employees, Unemployment for Veterans (UCX), and other unemployment compensation (which consists of trade readjustment allowance payments, Redwood Park benefit payments, public service employment benefit payments, and transitional benefit payments). Retirement payments included old age survivor and disability payments, railroad retirement and disability payments, federal civilian employee retirement payments, military retirement payments, state and local government employee retirement payments, federal and state workers' compensation payments, and other forms of government disability insurance and retirement pay.

The natural operating measure for casinos is gross revenue or profits. Unfortunately, such panel data do not exist — American **Indian** casinos are not required to report revenues. We therefore used the year a county first had an operating Class III n8 gambling establishment, including riverboat casinos, American **Indian** casinos, land–based casinos, and, in the case of Florida and Georgia, "boats to nowhere" — cruises that travel outside U.S. boundary waters so passengers can gamble. Not all forms of gambling qualify as casinos. For example, Montana has hundreds of small gambling outlets that offer keno or video poker, many in gas stations along the highway. Also, California has many card houses, some of which were illegal. These establishments are distinct from casinos in size and type of play.

n8 According to the **Indian** Gaming Regulatory Act of 1988, Class I gambling consists of "social games solely for prizes of minimal value." Included in Class I gambling are traditional **Indian** games identified with tribal ceremonies and celebrations. Class II gambling includes bingo and "games similar to bingo." Class III gambling includes "all forms of gaming that are not Class I gaming or Class II gaming," such as blackjack, slot machines, roulette, and other casino–style games.

To obtain casino opening dates we first contacted state gaming authorities. In cases like Washington, this was an expeditious way to ascertain the first year a casino opened. However, even the central gaming authorities and **Indian** affairs committees often lacked information on **Indian** casinos. Therefore, in most states we called each casino to obtain its opening date or first date of Class III gambling if it had previously operated other forms of gambling. n9 We also used lists from the Casino City Web site, www.casinocity.com, which lists casinos in every state, and verified it against the annually produced *Casinos: The International Casino Guide* (B.D.I.T., 1997).

n9 We distinguish the operation date of Class III casinos from other dates such as the legislation date to authorize casinos and the operation date of Class I or II establishments. Within a state, different counties acquired casinos at different times. Also, bingo halls operated by American **Indians** converted to Class III gambling during our sample. Nevada legalized commercial casino gambling (in 1931) prior to the start of our sample. Excluding Nevada from our sample slightly increased the magnitude of the estimated casino–crime effect. For example, when Nevada was excluded from the table 4 regressions, 39 of the 42 post–opening coefficient estimates became more positive or less negative. Excluding New Jersey, whose Atlantic City casinos opened in 1978, produced similar results.

Table 1 presents summary statistics for casino and noncasino counties. Noncasino counties had no casino in any year of the sample. Casino counties had a casino in operation during one or more years of the period. Casino counties had higher population, land area, income, and crime rates. The regressions later in the paper show no statistically significant differences between casino and noncasino preopening crime rates when control variables are included. The differences in the crime rates are due to the postopening differences between casino and noncasino counties.

TABLE 1. — DEMOGRAPHIC AND CRIME DATA: CASINO VERSUS NONCASINO COUNTIES

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	Casino Counties			Noncasino Counties		
Variable	Mean	Std. Dev.	Sample Size	Mean	Std. Dev.	Sample Size
Population	145,330	288,149	3,533	73,209	252,381	59,053
Population density (pop./sq. mi.)	204	491	3,533	217	1,462	59,045
Area (square miles)	2,021	3.056	3,533	1,008	2,883	59,060
Per capita personal income	$ 11,306	$ 2,689	3,533	$ 10,808	$ 2,618	59,040
Per capita unemployment ins.	$ 78	$ 54	3,533	$ 65	$ 51	59,024
Per capita retirement comp.	$ 10,771	$ 6,544	3,538	$ 9,831	$ 6,243	59,028
Aggravated assault rate	259	276	3,245	188	245	54,551
Rape rate	29	28	3,182	20	32	53,882
Robbery rate	82	136	3,254	44	143	54,623
Murder rate	5.9	9.3	3,254	5.5	10.5	54,628
Larceny rate	2,548	1,423	3,254	1,738	1,940	54,622
Burglary rate	1,056	666	3,254	770	1,110	54,619
Auto theft rate	267	264	3,254	167	276	54,627

Notes: Crime rates are annual incidents per 100,000 population. Monetary amounts are in 1982–1984 dollars.

Between 1977 and 1996 the number of states with some form of casino gambling rose from 1 to 29. Counties with casinos grew from 14 (all in Nevada) to nearly 180. The **Indian** Gaming Regulatory Act of 1988 increased the number of **Indian** casinos by mandating that states allow American **Indian** gambling on **trust lands** if the state sanctioned the same gambling elsewhere. The semisovereign status of **Indian** tribes and their management by the Federal Bureau of **Indian** Affairs gave them greater leverage with the states. By 1996, 21 states permitted casinos on **Indian** reservations.

Figure 1 shows the relationship between the number of counties with casinos (left scale) and the crime rate (right scale). The crime rate fluctuated between 1977 and 1990 when the number of casinos was relatively constant. However, between 1990 and 1996, when the number of counties with casinos increased rapidly, the crime rate dropped substantially. This contemporaneous casino growth and crime reduction is important. Some have used these data to suggest that casinos reduced crime. For example, Margolis (1997) stated. "Crime rates in Baton Rouge, LA have decreased every year since casino gaming was introduced." However, most regions experienced falling crime rates after 1991. Therefore, it is more appropriate to compare the magnitude of the decreases between casino and noncasino counties. We provide two comparisons of this type. Each suggests that crime rates in counties that opened casinos during our sample increased relative to crime rates in noncasino counties.

The first example, shown in figure 2, contrasts the crime rate for casino and noncasino counties between 1991 and 1996. FBI Index I offenses were summed by year for casino counties. Average crime rates for 1991–1996 were calculated by dividing these totals by the populations of the counties in the corresponding years. The series was then scaled to take the value 100 in the year 1991. The same procedure was applied to noncasino counties. n10 Though crime dropped in both sets of counties, crime dropped 12.0 percentage points more in counties without casinos than in casino counties. The absolute reduction in crime in noncasino counties (90.3 offenses per 100,000) was approximately 3 times as large as the reduction (30.6 offenses per 100,000) in counties that opened a casino.

n10 Data on Florida are excluded from figure 2 because it changed its crime reporting from summary-based to incident-based on January 1, 1988, and switched back to summary-based in 1995. Crime data are missing in the transition years. However, a Florida-only analysis is consistent with figure 2. Between 1977 and 1995 Florida counties that opened casinos experienced greater growth than noncasino counties in murder, rape, robbery, aggravated assault, burglary, larceny, and auto theft (19.9, 29.3, 27.3, 33.6, 7.7, 16.9, and 81 percentage points higher, respectively).

The second example, shown in figure 3, presents casino county crime data centered on the year of opening, where

the average crime rate for the two years prior to casino opening and the year of opening is set to 100. Crime rates were stable prior to opening, were slightly lower in the year of casino introduction, returned to approximately average levels for the next two or three years, and increased thereafter. By the fifth year after introduction, robbery, aggravated assaults, auto theft, burglary, larceny, rape, and murder were 136%, 91%, 78%, 50%, 38%, 21%, and 12% higher, respectively. These effects by year after introduction suggest the need to estimate lead and lag structures to identify the relevant time dependencies.

III. Theory

Previous studies focused on the empirical relationship between casinos and crime, but neglected theoretical explanations of how casinos affect crime. We present two reasons why crime could decrease and five reasons why crime could increase. We then discuss their different effects over time, an essential, but previously ignored issue. These factors are not mutually exclusive, and our empirical results estimate the total effect of these factors.

A. Theoretical Connections between Casinos and Crime

Casinos might reduce crime directly by improving legal earning opportunities, or indirectly through development effects.

Wage Effects: Grogger (1997) argued that increases in wages reduce crime, and Gould, Weinberg, and Mustard (2002) showed that increased employment and wages of low–skilled individuals reduce crime. Therefore, if casinos provide greater labor market opportunities to low–skilled workers, they should lower crime. Evans and Topoleski (2002) contend that when casinos are opened by American Indians, the fraction of adults who are poor, who are more likely to commit crime, declines by 14% and that employment increases significantly.

Development: Casinos may reduce crime indirectly through development effects. In the Midwest, for example, legislation decriminalizing casino gambling cited economic development as its rationale. Decaying waterfronts and derelict sections of town that once harbored crime may be less amenable to it when renovation occurs, streetlights appear, and resident presence increases. The streets near Las Vegas casinos, even at night, are often cited as some of the safest.

Likewise, casinos may increase crime through direct and indirect channels.

Development: Casinos may raise crime by harming economic development, the opposite of the indirect effect discussed above. While some commend casinos for bringing growth, others criticize them for draining the local economy, for attracting unsavory clients, and for leading to prostitution and illegal gambling–related activities.

Increased Payoff to Crime: Casinos may increase crime by lowering the information costs and increasing the potential benefits of illegal activity. Travelers are often more vulnerable to crime victimization, and because casinos attract gamblers and money, there is an increased payoff to crime from a higher concentration of cash and potential victims. A 1996 Kansas City case is illustrative: a local restaurant owner was followed home, robbed, and murdered in his garage after winning $3,000 at a casino (Reno, 1997). Similar stories exist in other locations with casinos.

Problem and Pathological Gambling: Crime may increase through problem and pathological gamblers. Pathological gambling is a recognized impulse control disorder of the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association. Pathological gamblers (often referred to as "addicted" or "compulsive" gamblers) are identified by repeatedly failing to resist the urge to gamble, relying on others to relieve the desperate financial situations caused by gambling, committing illegal acts to finance gambling, and losing control over their personal lives and employment. Problem gamblers have similar problems, but to a lesser degree. Compared to those arrested for crime, problem and pathological gamblers are more likely to be female, are older, and have higher incomes. n11

n11 See NGISC (1999, Tables 4–2, 4–5) and Bureau of Justice Statistics (2002, Tables 4.7–4.10, 6.13, 6.16, 6.17).

The geographical spread of casinos lowers the cost of buying the addictive good, which increases the quantity consumed by problem gamblers, as evidenced by the rapid increase in Gamblers Anonymous programs after casinos open. For example, the number of Wisconsin communities holding Gamblers Anonymous meetings grew from 6 to 29 in the seven years after Indian tribes initiated agreements with the state to open casinos in 1992. Eleven people who contacted the Wisconsin group in 1997 committed suicide because of gambling (*Chicago Tribune*, August 2, 1999). The

NGISC also reported a large increase in Gamblers Anonymous from 650 chapters in 1990 to 1,328 in 1998, "a period of rapid legalized gambling expansion" (NGISC, 1999, p. 4–17).

Conversely, when gambling is restricted, the cost of consuming the addictive good increases. Beginning July 1, 2000, South Carolina banned slot machines by court order. Six months later, the number of Gamblers Anonymous groups had dropped from 32 to 11, and the attendance fell from a typical size of approximately 40 to as few as 1 or 2 (Bridwell & Quinn, 2002, p. 718). During the same time, the number of help-line calls in Horry County (Myrtle Beach) dropped from 200 per month to 0 (ibid.)

An often-cited Maryland study found that 62% of the Gamblers Anonymous group studied committed illegal acts because of their gambling (Maryland Department of Health and Mental Hygiene, 1990); 80% had committed civil offenses, and 23% were charged with criminal offenses. A similar survey of nearly 184 members of Gamblers Anonymous showed that 56% admitted stealing to finance their gambling. The average amount stolen was $60,700 (median $500), for a total of $11.2 million (Lesieur, 1998).

Visitor Criminality: Crime may also rise because casinos attract visitors who are more prone to commit and be victims of crime. Chesney-Lind and Lind (1986) suggested that one reason tourist areas often have more crime is that tourists are crime targets. However, in the following section we show that visitors to national parks do not increase crime. Therefore, if casino visitors induce crime, it is because they are systematically different from national park visitors or visitors to other attractions. The three largest single tourist attractions in the United States in 1994 were the Mall of America (Bloomington, MN), Disney World (Orlando, FL), and Branson, MO (country and western music) receiving 38, 34, and 5.6 million visitors, respectively. For comparison, Hawaii received approximately 6 million and Las Vegas received 30.3 million visitors in 1994. Visitors per resident were 1,345 for Branson, 436 for Bloomington, 188 for Orlando, and 40 for Las Vegas. If visitors of any type are the predominant mechanism for crime, Branson and Bloomington should be among the most crime-ridden places in North America. Even adding visitors to residents in the denominator to calculate diluted crime rates, the crime rate per 100,000 visitors-plus-residents was 187.3 for Las Vegas, 64 for Orlando, 16.4 for Branson, and 11.9 for Bloomington. Bloomington received 7.7 million more visitors than Las Vegas, but had a diluted crime rate less than 1/15 of Las Vegas's. One indication of the different clientele casinos attract is the large increases in pawnshops that occur when casinos open. Other tourist areas do not experience similar increases.

A few of the numerous press examples that explicitly link casino gambling to crime are as follows:

Authorities linked a woman arrested in Bradenton, FL to one of the largest and most profitable burglary rings in the country. Baton Rouge, La., police Detective Jonny Dunham said that Barbara Dolinska and her cohorts like to gamble, and they committed many crimes in areas that either had riverboat gambling operations or other kinds of gaming. (*Sarasota [FL] Herald-Tribune,* December 23, 1999)

A man arrested in the armed robbery of a [New Orleans] bar told deputies of his motive for the hold up: he wanted to recover the several hundred dollars he lost playing the lounge's video poker machines. (*Las Vegas Sun,* June 14, 1999)

Former San Jose police officer, Johnny Venzon Jr., was imprisoned for stealing from people on his own beat while in uniform. Venzon, who blamed his actions on a gambling addiction, often burglarized homes and then investigated the crimes. (*San Francisco Chronicle,* February 25, 1999)

Daniel Blank confessed to stealing over $100,000 and killing six Louisiana residents from October 1996 to July 1997. Blank's motivation for his brutality was to obtain cash to support almost daily trips to video poker halls and casinos. Sometimes Blank headed for casinos right after committing the crimes. ([New Orleans] *Times-Picayune,* January 28, 1999)

Casino-Induced Changes in Population Composition: Gambling, along with gambling-related industries such as hotels and restaurants, is one of the few growth sectors with a high demand for unskilled labor. An increase in demand for unskilled and lower-income employees may alter the composition of the underlying labor force and residents toward those who are more apt to engage in criminal activity.

B. Effects across Types of Crime

Different crime mechanisms need not have the same effects across crimes. For example, improvements in the legal sector reduce property crime more than violent crime (Gould et al. 2002). Although murder has been tied to casino activities as described above, the statistical connection is harder to detect, because murder is rare in comparison with

other crimes and because other causes predominate. For this reason we expect casinos to contribute less to the overall explanation of murder rates.

Pathological gamblers generally commit crimes to generate money either to deal with their debts or to gamble. Peoria and Tazewell counties, surrounding one of Illinois's oldest riverboats, have documented a significant increase in casino-related embezzlement, theft, and burglary, much of it committed by professionals like teachers and lawyers (Copley News Service, June 28, 1999). Burglary, larceny, and auto theft, and the violent crime of robbery, have pecuniary payoffs. Casinos may affect aggravated assault because assault often occurs in the context of a crime with an economic payoff. Because the FBI classifies each incident involving multiple offenses under the most serious offense, property crimes and robberies that become assaults are categorized as assaults.

Identifying the link between casinos and rape is less obvious. Casinos may attract visitors more likely to commit rape or to be its victims, and have an indirect effect through the population composition effect and social climate. Changed population might be related to casino-generated growth in adult entertainment, escort services, and related industries, which show significant increases as measured by advertising or the number of listings in the yellow pages. Many law enforcement officials have testified that prostitution increased dramatically after casinos opened (FBI Conference on Casino Gaming, 1999). Pinnacle Entertainment was fined $2.26 million by the Indiana Gaming Commission for supplying prostitutes and gambling money to attendees at a golf outing sponsored by its Beltera Casino Resort (Piskora, 2002).

C. Intertemporal Effects on Crime

The theory importantly predicts that the effects of casinos will vary over time. Reduction of crime through improvements in labor market opportunities is observed prior to and shortly after the casino opening as low-skilled people may be hired by the casino or casino-related industries. The economic development theories (whether positive or negative) imply that a casino's effect after opening will grow until the casino market reaches equilibrium. Likewise, the visitor effect and the effect of changing composition of the population appear with the casino's opening and grow as people are attracted to the area.

Effects operating through problem and pathological (P&P) gamblers will not be felt until a gambling problem has developed. Breen and Zimmerman (2002) studied the time to pathology. "We found that the men and women who 'got hooked' on video gambling became compulsive gamblers in about one year. Those who got hooked on other kinds of gambling (such as horses, sports betting, blackjack, etc.) became compulsive gamblers after about three and a half years" (RI Gambling Treatment Program, 2002). According to gambling treatment specialists, "Many addicted gamblers follow essentially the same course . . . . [They] enter a desperation stage, [the treatment specialist] said, and when they've used up their own money and lines of credit they often turn to stealing" (Schneider, 2003). In the same article, police and prosecutors "told the newspaper that in recent years, with the arrival of casino gambling in the area, they have seen an increase in exactly the kinds of crimes [the convicted subject of the story] has acknowledged committing" (ibid.). The successful Evansville attorney Allan Lossemore's case (Rohrig, 2002) is symptomatic of the role of time lags. He began going to the Casino Aztar in July 1997 and for the first three or four months won enough money to subsidize his fledgling law practice. But by early 1998 he began to lose. "I started to draw from charge cards and from a line of credit in an attempt to get even," he reported. He tried to get back on track by barring himself from the casino and staying away from gambling, but late in 1999 he gambled again and lost. After a series of personal and professional financial circumstances, in mid-2000 he misappropriated clients' funds. "From there, I was just robbing Peter to pay Paul. I was gambling at that point pretty heavily — I was really trying to make up the difference." He was arrested in November 2000 and later jailed.

Research conducted for the NGISC reported that the population percentage of problem gamblers rose from 0.3% to 1.1% when the distance to the nearest casino fell from more than 250 miles to less than 50 miles, and rose from 0.4% to 1.3% for pathological gamblers (National Opinion Research Center, 1999, pp. 28–29). Distances less than 50 miles were not studied; thus a difference of 1.7% in P&P gambling probably understates the actual fraction. Research on the degree of P&P gambling in Las Vegas found the rate was 6.6% (Strow, 1999), suggesting that a difference of 5.9% is closer to an upper bound. If problem and pathological gamblers are an important explanation of crime, we expect to observe crime increase over time as more people start to gamble, develop gambling problems, and eventually commit crimes to fund their losses. Because different causes are at work, and may operate differently for different crimes, there is no presumption that intertemporal effects must be identical.

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IV. Estimation Strategy

Our empirical strategy addresses many limitations of the current research. First, by conducting the most exhaustive investigation and utilizing a comprehensive county–level data set that includes every U.S. county, we eliminate sample selection concerns. Second, by analyzing crime effects over time we exploit the time series nature of our data. Third, we are the first to articulate a comprehensive theory about how casinos could increase or decrease crime. Last, we use the most exhaustive set of control variables, most of which are commonly excluded from other studies.

A. Direct and Indirect Effects

As noted, casinos may affect crime rates directly through their effects on the resident local population and indirectly by increasing the number of casino visitors. The total includes both direct and indirect effects, as expressed in the following equations, where crime ($C[it]$) in county i in year t is a function of the presence of a casino, the number of casino visitors ($V[it]$) to the county, and other variables that affect crime (summarized in the term *Other*), and where a, b, c, and d are unknown coefficients:

(1) $C[it] = a \; Casino[it] + b V[it] + Other[it]$,

(2) $V[it] = c \; Attractions[i] + d \; Casino[it]$.

Casino visitors in (2) depend on both the visitor attractiveness of the county ($Attractions[i]$) and the presence of the casino. The coefficient a measures the direct effect of the casino on crime. The coefficients b and d measure the indirect effect via casino visitors. Substituting from (2) into (1) gives

(3) $C[it] = beta \; [i] + delta \; Casino[it] + Other[it]$

where $delta = a + bd$, and $beta \; [i] = bc \; Attractions[i]$. The total effect of the casino on crime, delta , in (3) includes the effects on both the local population and casino visitors. Estimating a in (1) would give only a partial effect, because it would not take into account the visitor effect. n12 The key to our being able to estimate the full effect is having panel data. Because many studies of the casino–crime relationship used cross–sectional data, they were limited to estimating only a partial effect.

n12 Ideally we would like to know both a and b. Because of data constraints, we must estimate only the total effect delta . Casino visitor data do not exist at the county level. Both a and b might be estimated using other variables to proxy for the number of casino visitors, but no annual time–series data exist at the county level.

B. Visitors

Although distinguishing direct and indirect effects is important, it is also important to avoid the assumption that anything that attracts the same number of visitors will have the same crime effects. Different types of visitors may have systematically different effects on crime even if the effect for all types of visitors is positive. The presence of a casino in (3) proxies for direct effects on crime and for an increased number of casino visitors. It does not necessarily follow that the same number of visitors for another purpose would generate the same crime outcomes. Visitors for other purposes appear in the variable *Other[it]*, which we now address.

Time series visitor data do not exist at the county level and certainly do not distinguish visitors for different purposes. Running the regression (3) without such information, therefore, risks omitted variable bias. In partial defense, no other crime studies have been run with these data either. However, more importantly, in the case of casinos the omitted variables are likely uncorrelated with a new casino. Fortunately, for at least one type of tourist, data *are* available that we can use to test the hypotheses of being uncorrelated with openings and having an effect on crime different from the effect of casinos. We obtained National Park Service time series data from 1978 to 1998 on all visitors to national parks, monuments, historic sites, recreation areas, and so on. These parks and attractions, scattered across the country, receive millions of visitors annually — some as many as 14 million. Some, such as Yellowstone National Park, are in counties with sparse population; others are in highly populated areas. In most cases the correlation between park visitors and the casino variables used in the study was well below 1%, and in no case was a correlation above 1.7%. This is consistent with the view that this type of omitted variable bias is likely to be small or zero. Although it is always preferable to include such variables when possible, we are confident that in the case of casinos the procedure employed in (3) of treating data on other visitors as part of the constant term and the error term is not a problem for the coefficients of interest. n13

n13 When visitors to National Park Service sites were included, the regressions (3) showed that an additional one million park visitors annually were associated with statistically significantly *fewer* crime incidents for rape, murder, robbery, and burglary, and had a statistically insignificant effect on auto thefts. The effects of park visitors on larceny and assaults were statistically significant but socially insignificant compared to the crime effects found for casinos (coefficient delta) and reported in section V. For example, we estimated the long–run effect of a casino on larcenies to be 615, which was roughly 60 times larger than the effect of one million national park visitors. This means that if the crime consequences of casino visitors and national park visitors were identical, a casino would have to attract over 59 million visitors annually to account for 615 additional larcenies. Las Vegas, the single largest casino gambling destination in the United States, attracted 30.3 million visitors in 1994.

A second analytical issue is whether to use *diluted* or *undiluted* crime rates. Should the number of crimes be divided by population — the conventional way to generate the crime rate (undiluted) — or by population *plus* visitors (diluted)? Four possibilities exist, depending on whether one considers total or partial effects, and studies diluted or undiluted crime rates. Some have argued for one combination or another without realizing that the choice is not methodological, but depends on what questions the researcher wants to answer. A common but invalid claim is that the diluted crime rate should be used to determine the change in probability that a resident would be the victim of a crime. However, knowing what happens to the diluted crime rate does not give the needed information and could even move the answer in the wrong direction. To illustrate, let $s[1]$ be the share of the resident population P victimized by residents, and let $s[2]$ be the share of the resident population victimized by V visitors. Similarly, let sigma [1] be the share of visitors victimized by residents, and sigma [2] the share of visitors victimized by visitors. Then the crime rate is $s[1] + s[2] + ($ sigma $[1] +$ sigma $[2])V/P$; the diluted crime rate is $(s[1] + s[2])w[P] + ($ sigma $[1] +$ sigma $[2])w[V]$ where $w[P]$ and $w[V]$ are the shares of visitors plus residents made up by residents and visitors, respectively; and the probability of a resident's being a crime victim is $s[1] + s[2]$. If residents do not victimize visitors (sigma $[1] = 0$), then $P = V$, and $s[2] +$ sigma $[2]$ is smaller than $s[1]$. The probability of a resident being victimized is $s[1]$ without visitors, and it rises to $s[1] + s[2]$ with visitors. The diluted crime rate is $s[1]$ without visitors and falls to $(s[1] + s[2] +$ sigma $[2])/2$ with visitors. Thus in this case the diluted crime rate falls while the probability of a resident being victimized rises.

In this study we are interested in the costs to the host county associated with a change in crime from whatever source. We are therefore interested in the total effect of casinos on crime, and thus use the undiluted crime rate based on equation (3).

C. Timing: Separating Casino Effects from Other Effects

The version of equation (3) that we estimated is

(4) $C[it] =$ alpha $+$ beta $[i]X[i] +$ gamma $[t]T[t] +$ delta $L[it] +$ theta $A[it] +$ epsilon $[it]$,

where $C[it]$ is the crime rate (offenses per 100,000 people) of county i in year t, alpha is a constant, and beta $[i]$ is the vector of estimated coefficients on the county–level fixed effects that control for unobserved characteristics across counties. The time fixed effect, $T[t]$, controls for national crime rate trends. Our base specification of $L[it]$ is a vector of the casino–opening dummy variables that includes two leads and five lags of the opening variable and captures the important intertemporal effects outlined earlier. The opening dummy variable takes the value 1 in the year the casino began operation and 0 in other years. In the reported regressions we used two years of leads, because it is unlikely that a casino would affect the crime rate more than two years prior to its opening. We stopped at five years of lags because the numbers of counties with casinos open three to five years, not counting Nevada counties, were 91, 59, and 35, respectively. Twelve counties (26 including Nevada counties) had casinos open for 6 or more years, and seven (21 including Nevada counties) had casinos open 7 or more years. For each group, however, observations are scattered widely across the decades and geography of our sample.

$A[it]$, is a vector of 22 control variables. It includes population density, the percentage of the population that was male, the percentage that was black, the percentage that was white, and the percentages in the age ranges 10–19, 20–29, 30–39, 40–49, 50–64, and over 65. n14 Economic variables in $A[it]$ are real per capita personal income, real per capita unemployment insurance payments, real per capita retirement compensation per old person, and real per capita income maintenance payments. All income figures were adjusted to a 1982–1984–dollar basis. $A[it]$ also includes a dummy variable indicating whether the county honored a shall–issue right allowing citizens to carry a concealed firearm upon request, and two years of leads and five years of lags on the shall–issue dummy. epsilon $[it]$ is the regression error. Including leads and lags, the regression had 50 explanatory variables plus one constant for each county (3,165) for a total

of 3,215 explanatory variables. This set was expanded to 58 variables plus county constants when we analyzed the effects of casinos on adjacent counties. Excluding observations with missing data reduced the sample size in most regressions to approximately 58,000, leaving more than adequate degrees of freedom for estimation.

n14 The remaining groups were Hispanics and those between 0 and 9 years.

We independently estimated each lead and lag of the casino opening year (describing the timing of crime effects) without cross restrictions. We weighted regression observations by county population.

V. Results

Before reporting the more sophisticated lag structure discussed above, we begin with a simple dummy variable for whether a county has a casino. Table 2 reports two such regressions for each crime. The left column for each crime reports the estimated coefficient for the casino dummy variable. The variable *Casino* takes the value of 1 if a casino is operating in the county for the year in question and 0 otherwise. No other explanatory variables are present in the leftmost regression. The regressions all show large, statistically significant elevated crime rates for counties with operating casinos. For example, according to table 2 such counties experience 157 more aggravated assaults annually per 100,000 population. This compares to average aggravated assault crime rates of 188 per 100,000 population for counties without casinos in any year of the sample reported in table 1. The right column for each crime reports the estimate of the casino dummy when year and county fixed effects are the only other explanatory variables included in the regression. In each case the effect attributed to an operating casino declines. Aggravated assault, for example, falls from 157 to less than 18. The coefficient estimates are positive and statistically significant for five crimes. The estimated effect is positive for murder and negative for burglary; neither is statistically significant. To summarize the two regressions, when a simple dummy variable specification is used for a casino being open, the estimated casino effect is positive and statistically significant in twelve of the fourteen regressions. The other two results are not statistically different from 0. These before–after results obscure the intertemporal effects, so we now turn our attention to the model that includes leads and lags.

TABLE 2. — CASINO CRIME RATE REGRESSIONS EMPLOYING CASINO DUMMY VARIABLE ONLY

	Violent Crime							
	Aggravated Assault		Rape		Robbery		Murder	
Casino	157.254 (23.04)	17.825 (4.29)	11.521 (17.91)	0.973 (2.04)	86.905 (12.09)	34.175 (10.07)	1.522 (6.88)	0.117 (0.75)
Year fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
County fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
N	57,796	57,796	57,064	57,064	57,877	57,877	57,882	57,882
F	530.68	754.52	320.88	126.60	146.06	212.39	47.30	81.94
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R–squared	0.0091	0.8147	0.0056	0.7234	0.0025	0.8861	0.0008	0.7506

	Property Crime					
	Larceny		Burglary		Auto Theft	
Casino	1128.547 (31.88)	218.850 (9.44)	144.373 (7.58)	-23.927 (-1.58)	266.582 (21.72)	217.416 (30.87)
Constant	Yes	No	Yes	No	Yes	No
Year fixed effects	No	Yes	No	Yes	No	Yes
County fixed effects	No	Yes	No	Yes	No	Yes
N	57,876	57,876	57,873	57,873	57,881	57,881
F	1016.63	138.15	57.45	635.32	471.71	472.89
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

		Larceny	Property Crime Burglary		Auto Theft	
R-squared		0.0173	0.7839	0.0010	0.6699	0.0081	0.8328

Notes: Coefficient estimates are additional annual crime incidents per 100,000 population, t-statistics are in parentheses.

Tables 3 and 4 report coefficient estimates and t-statistics for specifications of (4) that allow for the timing of the effects of casino opening. Table 3 includes year fixed effects and county fixed effects but excludes the control variables $A[it]$, whereas table 4 includes these regressors. n15 For example, the estimated coefficient of lag 4 in the table 3 column labeled "Aggravated Assault" indicates that the aggravated assault rate was higher by 62.153 offenses per 100,000 population four years after a casino opened in the county. The number of observations for each regression varied from 57,023 to 57,841. The $R<2>$ was between 0.67 and 0.89.

n15 We report casino variables. Results for the 588 other coefficient estimates for the seven crime regressions are omitted for lack of space, because they are used as controls, and because we are primarily interested in the casino variables.

TABLE 3. — CASINO CRIME RATE REGRESSIONS EXCLUDING CONTROL VARIABLES.

	Aggravated Assault	Rape	Robbery	Murder	Larceny	Burglary	Auto Theft
Lead 2	4.325 (0.61)	1.189 (1.42)	13.178 (2.26)	.725 (2.73)	113.498 (1.64)	33.865 (0.79)	114.440 (9.46)
Lead 1	4.455 (0.64)	0.708 (0.86)	19.067 (3.32)	1.270 (4.85)	160.828 (1.82)	28.071 (0.57)	142.864 (11.98)
Open	8.799 (1.19)	.250 (0.29)	19.142 (3.15)	1.251 (4.53)	229.687 (2.61)	-19.609 (-0.55)	182.095 (14.47)
Lag 1	16.656 (2.24)	1.765 (2.06)	47.031 (7.72)	1.360 (4.91)	315.990 (2.99)	54.171 (0.76)	236.103 (18.69)
Lag 2	3.647 (0.46)	0.684 (0.76)	56.089 (8.63)	1.305 (4.41)	193.729 (0.89)	3.025 (0.03)	225.876 (16.75)
Lag 3	29.953 (3.22)	3.436 (3.23)	81.467 (10.67)	0.801 (2.30)	201.816 (1.51)	13.797 (0.25)	253.046 (15.98)
Lag 4	62.153 (4.76)	7.021 (4.72)	75.755 (7.08)	0.429 (0.88)	460.681 (2.74)	153.209 (2.74)	246.417 (11.11)
Lag 5	124.683 (7.80)	7.076 (3.87)	76.725 (5.84)	-1.496 (-2.50)	715.031 (2.65)	236.992 (2.97)	376.278 (13.80)
Control variables A[i]	No	No	No	No	No	No	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	57,755	57,023	57,836	57,841	57,835	57,832	57,840
F	562.01	95.50	163.79	63.83	19.25	79.81	358.19
Prob. > F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R-squared	0.8149	0.7236	0.8865	0.7511	0.7843	0.6730	0.8334

Notes: Coefficient estimates are additional annual crime incidents per 100,000 population, t-statistics are in parentheses. We used robust standard errors for larceny and burglary, which the Breush–Pagan test indicated had heteroskedasticity.

TABLE 4. — CASINO CRIME RATE REGRESSIONS INCLUDING CONTROL VARIABLES

	Aggravated Assault	Rape	Robbery	Murder	Larceny	Burglary	Auto Theft
Lead 2	–3.843	0.157	6.924	0.438	37.710	16.481	97.006
	(–0.55)	(0.19)	(1.21)	(1.00)	(0.63)	(0.43)	(8.43)
Lead 1	–8.498	–0.815	8.164	0.969	47.645	–6.164	113.656
	(–1.24)	(–1.01)	(1.44)	(1.34)	(0.61)	(–0.14)	(10.00)
Open	0.376	–0.644	11.218	1.103	148.279	–23.625	152.659
	(0.05)	(–0.77)	(1.88)	(1.37)	(1.74)	(–0.72)	(12.72)
Lag 1	2.613	0.955	32.588	1.188	173.836	30.661	183.735
	(0.36)	(1.14)	(5.43)	(1.68)	(1.83)	(0.55)	(15.24)
Lag 2	–9.739	–0.267	39.137	1.181	–0.447	–51.987	161.791
	(–1.25)	(–0.30)	(6.08)	(1.46)	(–0.00)	(–0.68)	(12.53)
Lag 3	20.306	3.339	70.427	1.099	4.132	–48.495	206.769
	(2.22)	(3.20)	(9.30)	(1.32)	(0.03)	(–0.89)	(13.60)
Lag 4	42.844	6.503	52.188	0.572	184.855	64.367	161.641
	(3.34)	(4.47)	(4.93)	(0.54)	(1.41)	(0.92)	(7.60)
Lag 5	99.982	9.979	65.240	–0.458	614.695	325.147	271.848
	(6.38)	(5.59)	(5.02)	(–0.55)	(1.98)	(2.30)	(10.43)
Control variables A[i]	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	57,724	56,992	57,805	57,810	57,804	57,801	57,809
F	393.15	129.78	143.37	13.34	42.97	121.18	346.19
Prob. > F	0.0000	0.00000	0.0000	0.0000	0.00000	0.00000	0.0000
R–squared	0.8252	0.7410	0.8913	0.7623	0.7992	0.6997	0.8504

Notes: Coefficient estimates are additional annual crime incidents per 100,000 population. t-statistics are in parentheses. We used robust standard errors for larceny and burglary, which the Breush-Pagan test indicated had heteroskedasticity.

The patterns in both tables show that casino effects tend to increase over time after a lag of 2–3 years. In table 3, which does not include control variables, the estimates on the casino leads are often positive and statistically significant, consistent with the common belief that casinos are more likely to be placed in high-crime areas. However, when control variables are included, all of the leads are statistically indistinguishable from 0 except for those on auto theft.

Another key difference is that table 3 shows much larger increases in crime in the lagged years. When the control variables are included in table 4, these larger positive estimates are reduced. Because the table 4 estimates have better fit in the lead variables and the added control variables reduce omitted variable bias, we emphasize these results, that show smaller casino effects on crime.

A. Violent Crime

Figure 4 displays the information on violent crime from table 4. The horizontal axis plots the casino opening leads and lags, and the vertical axis plots the coefficient estimates. The vertical lines show the 95% confidence intervals, the range within which the regression indicates the true coefficient should lie with 95% probability.

For aggravated assault, only estimates for the third and subsequent year after opening are significantly above 0, and the trend rises. The estimated high occurs in the fifth year after opening, when the aggravated assault rate is 100 assaults higher per year. This pattern of crime increase is unlike the typical pattern of visitor increases after casino opening. Grinols and Omorov (1996) showed that the number of visitors to Illinois casinos typically rose immediately after opening and

reached equilibrium after 6 months or less. n16

n16 In addition to the regressions reported, we ran regressions that included as many as 4 leads and 7 years of lags of the casino opening variable. With few exceptions, leads continued the pattern of being statistically indistinguishable from 0, and later lags showed comparable or greater estimated effects to the fifth year lag. In the case of murder, the sixth and seventh lags continued the pattern of being statistically indistinguishable from 0.

Figure 4 for rape shows coefficient estimates that are not significantly different from 0 prior to the opening. However, they are positive and significant in the third and subsequent years after the casino opened, rising from the third year on. A county that introduces a casino might expect a negligible effect in the first two years after opening, but a higher rape rate by 6.5 to 10 incidents per 100,000 population in the fourth and fifth years after opening.

The pattern for robbery in figure 4 is similar to the patterns for aggravated assault and rape, with one important exception — the increase in robbery begins immediately. In the first year there were approximately 35 more robberies per 100,000 people, which increases to over 60 three years after opening.

As expected, the impact of casinos on murder is the smallest among all offenses. Figure 4 shows that casino counties have slightly higher murder rates than noncasino counties both before and after opening. However, murder shows no statistically significant coefficient estimates for any of the casino leads or lags, and the change from before to after is not statistically significant. Gambling-related murders include incidents such as the disgruntled gambler who killed a casino teller when he tried to retrieve his gambling losses, a spouse who fought over the other's gambling losses and was murdered, a parent's gambling leading to the death of her child, murder for insurance, and similar tales. n17 However, because murder is the least frequently committed crime and most counties have zero murders, murder rates typically have high variance, which makes it difficult to identify effects.

n17 See Jeffry Bloomberg, Prepared Statement, Hearing Before the Committee on Small Business, House of Representatives, 103rd Congress, Second Session, 21 September 1994, Serial No. 103–104, Washington, DC: USGPO, p. 47. Accounts of the more spectacular gambling-related murders and deaths (most often suicides) frequently appear in the press. *USA Weekend*, February 10–12, 1995, p. 20, for example, describes a man killing his wife and beating up his daughter in a fight over his gambling away thousands of dollars. The Associated Press, September 3, 1997, reported on a 10-day-old infant in South Carolina who died of dehydration after being left in a warm car for approximately 7 hours while her mother played video poker. A mother in Illinois was convicted of killing her infant children for insurance money because of her gambling.

B. Property Crime

Figure 5 displays the coefficient estimates in table 4 for property crimes. The larceny estimates increase from 0 in the second year after opening, to 4.1 in the third, 185 in the fourth, and over 615 in the fifth year after opening. Burglary increases from negative estimates in the second and third years after opening, to 64 in the fourth, to 325 in the fifth. Only the fifth-year estimates are individually statistically significant, so we investigated further the significance of the rising third-, fourth-, and fifth-year coefficient estimates. We checked whether the rising patterns of coefficient estimates in the last three years with the lag 5 estimated coefficients positive and significant persisted or disappeared after the fifth year. Estimates of the sixth-and seventh-year lags were 745 and 1,069 for larceny and 201 and 229 for burglary, respectively. Moreover, lags 5 through 7 pass a 5% F-test for significance for both offenses.

Figure 5 for auto theft presents a different picture. It is the only crime that showed statistically significant leads, which were positive. After opening, the rates increase slightly for a few years and increase substantially after five years. The data indicate that casino counties did not experience the same decreases in auto thefts that noncasino counties did after 1991, when the number of casinos increased rapidly. n18

n18 A similar divergence in Florida started in 1984 and grew after that, consistent with Florida casino openings. The first Florida casinos opened in two counties in 1982, two more opened in 1988, and the rest opened between 1990 and 1995.

A second factor may be that we were unable to control for Lojack, an electronic tracking system that allows police to quickly locate and recover stolen autos. Ayres and Levitt (1998) found that Lojack accounted for a significant reduction in auto thefts in the 1990s. Because cities that implemented Lojack generally do not have casinos, we may overstate the

effect of casinos on auto theft. n19 It is also possible that Lojack's use is not yet sufficiently widespread to greatly affect our estimates.

> n19 Ayres and Levitt (1998) showed that Lojack had little effect on other offenses, so our results for the other crimes will not be affected.

C. Additional Robustness Checks

The precisely correct model of crime is not known. Thus, in addition to the comparison of tables 3 and 4, we considered several additional formulations to test the robustness of the results.

Law Enforcement Variables: All the regressions reported to this point omit law enforcement variables. Although including them reduces omitted variable bias, it also introduces sample bias by significantly limiting the number of counties with available data. n20 To examine this tradeoff we included two additional sets of law enforcement control variables. When we included the arrest rate as an explanatory variable, the estimated casino effects for almost every year after opening and for almost all crimes were higher than those reported in table 4. Therefore, the table 4 results that we emphasize are biased against the finding that casinos increase crime.

> n20 For example, the arrest rate is undefined when there are 0 offenses for a given crime type. Many small counties record no offenses even for property crimes for a given year, and even large counties frequently record no offenses for murder and rape, which consequently produce a large number of missing observations for the arrest rate. For some offenses including the arrest rate eliminated over 30,000 observations. See Lott and Mustard (1997) and Levitt (1998) for more detailed discussions.

Although arrest rates are often undefined, the problem is even bigger for other law enforcement variables. County–level conviction rates and sentence lengths are available for only four states (Mustard, 2003), and annual police employment is unavailable at the county level.

We also included explanatory variables that estimated the probability of capital punishment, which we estimated in four different ways. n21 When these variables are included, the results are qualitatively the same as for the base regression. There are slight differences of the estimated effects for different crimes in different postopening years, but the general qualitative trends are similar.

> n21 The first was a prorated number of executions in the previous and current year divided by the number of people sentenced to death six years ago. The second was the number of executions in the first three quarters of the current year and last quarter of the previous year divided by the number of people sentenced to death six years ago. The third is a prorated count of executions in the previous and current year divided by the number of persons on death row at that time. The last was the number of executions in the first three quarters of the current year and the last quarter of the previous year, divided by the number of persons on death row at that time. Gittings and Mocan (2003) provided the first two variables, and Gittings and Mocan (2001) explain the last two in more detail.

That the inclusion of **law enforcement** variables generally increases the estimated casino effects is consistent with reports from **law enforcement** officials that enforcement expenditures increased substantially when casinos opened. Stephen Silvern (FBI in Atlantic City) documented that expenditures for the Atlantic City Police Department and Prosecutor's Office grew much more rapidly in the late 1970s and early 1980s than similar expenditures in the rest of the state and nation (Federal Bureau of Investigation Conference on Casino Gaming, 1999). The director of the **Indiana** Gambling Commission reported that **Indiana** hired an additional 120 state troopers when the casinos opened in 1995. n22 Allocations for police services also rose substantially in New Orleans upon introduction of casinos. n23 Law enforcement officials emphasize that to maintain public safety, spending on enforcement resources must increase when casinos open. Because we cannot measure all these additional resources that reduce crime, our estimates without enforcement variables tend to understate the effect of casinos on crime.

> n22 John Thar, director of the **Indiana** Gambling Commission, report at Federal Bureau of Investigation Conference on Casino Gaming (1999).

> n23 Lt. Joseph P. Lopinto, Jr., commander of the Gambling Section of the New Orleans Police Department, reported that his department has been significantly resource–constrained since the opening of New Orleans's casinos

and the resulting increase in demand for police services (Federal Bureau of Investigation Conference on Casino Gaming, 1999).

Casino — Population-Density Interactions: A natural question is whether the effect of casinos on crime varies with the type of county, such as a rural–urban difference related to population density. To test for a population-density interaction, we multiplied each of the eight casino-opening lead and lag variables by the county population density and reran the original regressions including these eight new variables. The density interaction coefficient estimates were statistically significant as a group at the 1% or better level for all regressions except aggravated assault and larceny, which were significant at the 11% and 46% levels, respectively. With the exception of murder and auto theft, the same rising pattern of crime after casino introduction was observed as found in the original regressions. Crime is not statistically different from zero in the years before casino introduction and immediately thereafter, but begins to rise three or four years after introduction. By the fifth year after casino introduction, a statistically significantly elevated crime rate for both low-and high-density counties appears. Introducing a density effect does not change the prediction of the model. These results give us confidence that the effect of casinos on crime is similar in large and small counties. For auto theft the casino effect is largest for less densely populated counties.

D. Summary

We summarize the results in table 4 and figures 4 and 5. First, the casino-opening lead variables suggest that after controlling for other variables casinos were not more likely to be placed in areas that had systematically different crime environments than other regions.

Second, after casinos opened, casino-county crime rates increased relative to the noncasino-county rates. Of the 42 estimated casino effects (one opening and five lags for each of seven offenses), 34 are positive, of which 19 are statistically significant at the 0.05 level, and others are significant at the 0.10 level. In contrast, none of the 8 negative estimates are statistically significant. As expected, murder exhibits no relation to casino gambling.

Third, the time pattern of estimated coefficients implies that the casino effects may change over time. With the exception of murder, all crimes show higher estimates for the last two coefficients (lags 4 and 5) than for the first two (leads 2 and 1). For most offenses, the statistically significant differences tend to appear two or three years after casino opening. Only one estimated coefficient for the year of opening is statistically significant. Estimates of the sixth and seventh lags (run but not reported) are typically positive and statistically significant.

Fourth, the increase over time in casino effect is consistent with the effects outlined in the theory. For example, the crime-mitigating influences through increased wages and employment should occur before and shortly after opening. In contrast, the crime-increasing factors are more long-term. Casino-induced changes in population and the effects of negative development grow over time. Also, clinical research shows that problem and pathological gamblers typically take approximately 2 to 4 years to start gambling, become addicted, exhaust alternative resources, and eventually commit crimes. Studies that did not have large data sets or a sufficient number of years of observations after casino opening, and that did not allow for the effects of casinos to change over time, missed these effects. An additional potential explanation of the time pattern is that casinos have an immediate impact on crime, but that **impact** is ameliorated by a large increase in **police** resources, which are typically significantly increased when casinos open, but do not maintain the same rate of growth over time. The slightly more immediate impact of casinos on violent crime may be explained in terms of *imported* criminals. It may take less time to habituate to a new casino's location than for people to exhaust their resources.

E. Evaluation

The regressions in table 4, of course, cannot decompose the net number of offenses to assign them to each alternative explanation. Nevertheless, it is instructive to ask how many crimes table 4 would imply per additional P&P gambler if all estimated additional crime incidents were arbitrarily assigned to this one source. The coefficient estimates report additional crime incidents per 100,000 population. If x is the coefficient, and y is the change in P&P share of the population, then

(5) $x/10^5$ Offenses/Capita x $10^{-5}/10^{-5}$ x $1/y$ Capita/Problem and Pathological = x/y x 10^{-5} Offenses/Problem and Pathological.

The total number of crime incidents estimated in table 4 in the fifth year after casino opening is $x = 1,386.4$. If $y = 0.059$ (as in the numbers reported for Las Vegas, for example), then the average additional P&P gambler would have to

commit 0.23 crime incidents per year to account for all additional crime, so that roughly one in four P&P gamblers would have to commit a crime annually. This figure rises to 0.82 if $y = 0.017$ at the other extreme. Thus 20%–80% are reasonable proportions relative to the information reported above that 80% of problem gamblers studied committed civil offenses, 56% had stolen, and 23% were charged with criminal offenses. In contrast, if the calculation suggested that each P&P gambler would be required to commit a dozen crime incidents per year, the numbers would be of a different magnitude.

The estimated coefficients in table 4 also allow us to gauge the fraction of observed crime due to casinos. Summing the estimated number of crimes attributable to casinos for each county, taking into account how many years the casino was in operation, and dividing by the casino counties' total population measures the contribution of casinos to observed crime. Estimates of the share of crime attributable to casinos in 1996 for individual crimes ranged between 5.5% and 30%. Auto theft was the highest, followed by robbery at 23%. The values for the rest of the offenses were between 5.5% and 10%.

We provide three estimates of the implied cost of additional crime. First, we use the cost per victimization figures adjusted to 2003 dollars using the CPI-U to calculate the total social cost of crimes committed in casino counties that are attributable to the casino presence according to the estimated coefficients in table 4 (Miller, Cohen, & Wiersema, 1996, column 4 of Table 9, p. 24). We also report the total social cost for casino counties on a per adult basis. Finally, although the social cost of property crime is not synonymous with the value of the lost property, the latter is nevertheless useful in describing the effect of casinos. The *Sourcebook of Criminal Justice Statistics* (Bureau of Justice Statistics, 2002, table 3.112, p. 298) contains data about the average property loss for four of the offenses in this paper — robbery, larceny, burglary, and auto theft. For those offenses we took the fifth–year lag coefficient estimates for each crime and multiplied them by the average loss per crime adjusted to 2003 dollars using the CPI-U. This produced property loss numbers per 100,000 population, which can be aggregated to the entire adult population.

In 1996 the total costs for the 178 casino counties exceeded $1.24 billion per year. If the estimated coefficients from table 4 are applied to a representative county of 100,000 population, 71.3% of which are adults (as is representative of the United States as a whole), then the social costs per adult are $75 in 2003 dollars. These costs reflect the profile of the lagged effect on crimes experienced by the particular sample of casino counties making up our data set. The value of lost property from the four property crimes is $2.905 million for a population of 100,000 ($ 29.05 per adult), which becomes $5.91 billion when aggregated to the national level for 2003.

We can compare these costs with other estimates that relied on a different methodology. Social costs of casinos have commonly been estimated in terms of the average cost imposed on society by a P&P gambler n24 multiplied by their number. In the most recent comprehensive study of this type of which we are aware, Thompson, Gazel, and Rickman (1996b) found that total social costs were $135 per adult in 1996 dollars, of which $57 (40%) were due to police and judicial–related costs and to thefts. n25 Thompson et al. reported that they intentionally "projected numbers believed to be very conservative," and that the crime costs in their sample (Wisconsin) were probably lower than similar costs in other locations. Adjusting crime costs to 2003 dollars, their estimate is $67. Taking into account the different samples and methodologies, their estimate is remarkably close to the direct costs estimated here for 1996 ($ 75).

n24 Some studies group problem gamblers with pathological gamblers; some treat the two groups separately. Costs are computed by learning the behavior of P&Ps through direct questionnaires and surveys.

n25 The social–cost effect of casino–related serious problem gamblers was $138,453,113. Dividing this by the number of adults over 20 in the counties with casinos gives the per adult figure in the text. The proportion of costs due to police, theft, and judicial–related costs is determined from their tables A-2 and A-5.

Corrective taxes reflect the costs that an industry imposes on society. Assuming crime costs no lower than $75 (there are crimes other than FBI Index I, such as embezzlement, not considered here), crime costs equal to 40% of total social costs, and revenues for a representative casino of $400 per adult n26 each year implies tax rates above 47% of revenues. In a few cases tax schedules for high–end casinos include portions where average tax rates reach these levels. n27 Having applied proper taxes, continued operation would be efficient in a Kaldor–Hickes sense. n28 If it is feasible to offer gambling in an altered manner that causes fewer P&P gamblers and less crime, then this may be better for society than a response based on taxes.

n26 Research for the NGISC estimated that average losses by adults living near a casino might be in the $400–$ 600 range per year. Other estimates, including some by the gambling industry for losses by residents in Las Vegas and Atlantic City to casinos, are lower than $400, even after adjusting upward for price level changes.

n27 In Illinois the average tax rate rises from 43% to 50% as casino annual gross revenues rise from $250 to $340 million. Revenues this large imply a very successful casino.

n28 This observation is due to the anonymous referee. Whether casinos expand, shrink, or disappear will be immaterial, because whatever outcome occurs will be the result of socially optimal decisions by the firms themselves.

VI. Do Casinos Simply Attract Crime from Elsewhere?

The estimates suggest that after five years, 8.6% of the observed property crime and 12.6% of the violent crime in casino counties are due to casinos. n29 However, do casinos create crime, or merely move it from elsewhere? If the casino-induced increases in crime come only from neighboring regions, casinos produce no new crime. This untested hypothesis is first tested here. To address this question we examine the crime rates of counties that border casino counties. When casinos open, neighboring county crime rates could either decrease, remain the same, or increase. The first possibility supports the idea that casinos move crime from adjacent counties but do not create crime. In the second and third cases, adjacent counties experience no change or an increase in crime, both of which indicate that total crime rises and that casinos create crime.

n29 Section V C explains the computation of these numbers.

To implement a test strategy we reestimate the table 4 regressions with neighbor leads and lags as additional control variables. We define neighbor lead, opening, and lag variables, similar to those in tables 3 and 4 for the host county. The neighbor opening variable took a value of 1 if a casino opened in an adjacent county in the given year. Adjacent counties are the relevant unit of measurement, because the vast majority of casino patrons come from the local region surrounding the casino. For example, in Illinois over 92% of casino customers come from within 75 miles (Gazel & Thompson, 1996). A few casinos, mainly in Nevada, draw their customers from outside their immediate area. However, our estimates do not rely on these casinos to identify the effects, because these casinos opened prior to the beginning of our sample.

Figures 6 and 7 summarize the estimated casino effect for neighboring and home counties for violent and property crimes, respectively. When the neighbor variables were included, the host-county crime coefficient estimates were virtually unchanged, in terms of both point estimates and statistical significance. For the years before casinos open, there is virtually no effect of the casino on crime rates in neighboring counties. Of the 42 opening and postopening coefficient estimates on the neighbor variables, 32 are positive, of which 15 are statistically significant at the 0.05 level. Of 21 estimated coefficients for lags 3-5, 18 are positive, of which 8 are individually statistically significant. None of the three negative coefficients for lags 3-5 are statistically significant. All crimes but murder display elevated and rising lags 3, 4, and 5.

For all offense types the data reject the contention that the increase in crime in the casino counties can be attributed to decreases in neighboring counties, and thus support the contention that casinos create crime. F-tests reject at the 5% level for all crimes the hypothesis that host-county opening-and lag-coefficient estimates are matched with negative estimates of equal size in neighboring counties. On the contrary, a simple correlation of host-and neighbor-county coefficient estimates for opening and lags ranges from 0.61 to 0.82, with the exception of robbery (0.14). However, there is ambiguity about the extent to which casinos increase crime in neighbor counties. Murder clearly exhibits no spillover effects. For the other offense types the neighbor time pattern is similar to the home-county time pattern. Crime typically increases in later lags, but at half or less the magnitude of the home-county effect, and many of these neighbor-county effects are not statistically significant until the very last lags. F-tests of the proposition that neighbor county coefficient estimates equal their host-county counterparts are rejected at the 5% level for aggravated assault, rape, robbery, and auto theft, but not for the other three crimes.

In our discussion of host-county auto theft rates we speculated as to why the host-county estimated coefficients displayed a different pattern of continually growing crime. This pattern of host-county coefficient estimates did not appear closely related to the introduction of casinos. However, auto theft for neighbor counties displays the pattern of crime increases observed for other crimes. There is a statistically significant, discernibly different crime rate three or more years after the opening of the neighboring casino, but not in the years before. The neighbor-county effect suggests possible spillover of auto theft crimes due to the casino.

VII. Conclusions

Our analysis of the relationship between casinos and crime is the most exhaustive ever undertaken in terms of the number of regions examined, the years covered, and the control variables used. Using data from every U.S. county from 1977 to 1996 and controlling for over 50 variables to examine the impact of casinos on the seven FBI Index I crimes (murder, rape, robbery, aggravated assault, burglary, larceny, and auto theft), we concluded that casinos increased all crimes except murder, the crime with the least obvious connection to casinos. Most offenses showed that the impact of casinos on crime increased over time, a pattern very consistent with the theories of how casinos affect crime. The crime-ameliorating effects of casinos through increased employment opportunities and wages for low-skilled people will be concentrated shortly after opening. Also, law enforcement agencies can frequently use casino openings to leverage greater immediate staffing increases, but are unable to sustain this growth. This effect further reduces the immediate impact of casinos on crime. However, over time these effects are dominated by casino-related factors that increase crime. Specifically, problem and pathological gamblers commit crimes as they deplete their resources, non-residents who visit casinos may both commit and be victims of crime, and casino-induced changes in the population start small but grow. The data show that these crime-inducing and crime-mitigating effects offset each other shortly after opening, but over time the crime-raising effects dominate, and crime increases in subsequent years. Furthermore, we believe these estimates to be lower bounds on the true effect because they omit measures of law enforcement, which is typically increased substantially when casinos open. When we include law enforcement measures, the estimated effects are larger.

According to the estimates, between 5.5% and 30% of the different crimes in casino counties can be attributed to casinos. This translates into a social crime cost associated with casinos of $75 per adult in 1996. This figure does not include other social costs related to casinos, such as crime in neighboring counties, direct regulatory costs, costs related to employment and lost productivity, and social service and welfare costs. Overall, 8.6% of property crime and 12.6% of violent crime in counties with casinos was due to the presence of the casino. Although robbery, the offense that exhibited the largest increase, is classified as a violent crime, it is similar to property crime in that its motivation is financial.

We also investigated whether the crime in casino counties is attracted (moved) from other regions, or is created. Counties that neighbor casino counties did not experience compensating crime reductions, indicating that crime was created in casino counties, rather than simply being shifted from one area to another. There is mixed evidence about whether casino openings increase neighbor-county crime rates. Murder rates in neighbor counties are unaffected. The other offenses exhibit increasing neighbor rates, but are generally not statistically significant until the fourth and fifth year after opening.

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GRAPHIC: FIGURE 1. — INDEX CRIME RATE AND NUMBER OF COUNTIES WITH CASINOS: UNITED STATES, 1977–1998; FIGURE 2. — CASINO-COUNTY VERSUS NONCASINO-COUNTY CRIME RATES; FIGURE 3. — CRIME BEFORE AND AFTER CASINO OPENING: CASINO COUNTIES, OMITTING FLORIDA IN 1988, 1996; FIGURE 4. — CASINO EFFECTS — VIOLENT CRIME; FIGURE 5. — CASINO EFFECTS — PROPERTY CRIME; FIGURE 6. — HOME AND NEIGHBOR CASINO-CRIME EFFECTS: VIOLENT CRIME RATES; FIGURE 7. — HOME AND NEIGHBOR CASINO-CRIME EFFECTS: PROPERTY CRIME RATES

CASINOS, CRIME, AND COMMUNITY COSTS

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Abstract

Casino gambling—providing negative expected return with positive variance—has puzzled economists with respect to a number of issues, including the extent to which casinos are tied to externalities. In the case of tobacco, the link between use and health-related externalities has led to state lawsuits to recover social costs. This paper studies the connection between casinos and crime using county-level data for every US county between 1977 and 1996, a period spanning the introduction of casinos to states other than Nevada. We find that casinos increased crime after a lag of 3 to 4 years. The data indicate that 8 percent of crime observed in casino counties in 1996 was attributable to casinos. The average annual cost of increased crime due to casinos was $65 per adult per year. Furthermore, by studying the crime rates in counties that border casino host counties we show that casinos create crime, not merely move it from one area to another. If anything, the neighbor data indicate that casino crime spills over into the border counties rather than is moved from them. Last, we explain why other studies have sometimes failed to identify a link between casinos and increased crime rates.

JEL Codes: K0, K2, H2

Key Words: Casinos, Index I Crime, Externalities, Social Costs, Pigouvian Taxes

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CASINOS, CRIME, AND COMMUNITY COSTS

There is no consensus about the connection between casinos and crime. In spite of much public attention devoted to casinos and the many questions surrounding this dynamic sector, no authoritative analysis exists. Economists are virtually silent about the issue. Studies from other disciplines exhibit a number of fundamental weaknesses. For example, most used small samples, and focused on Las Vegas, Atlantic City or Reno. They rarely controlled for important variables that the law and economics literature has commonly identified as affecting crime. Time-series data were rarely used, and when they were, were not exploited to examine timing issues such as the pattern of effects over a number of years. The most commonly used methodology was to compare crime rates of different cities or regions in a given year. Last, many studies were agenda-driven, conducted or funded by either pro-gambling or law enforcement organizations. This paper re-examines the impact of casinos on crime to establish whether there is a connection to increased crime rates, and if so, to determine the likely magnitude of the social costs.

There are at least two reasons why determining whether there is a link between casinos and crime is socially important at this time. First, the casino industry has grown extremely rapidly in the last decade and has become one of the most controversial and influential industries. Commercial casino revenues increased 240 percent from $8.7 billion in 1990 to over $20.5 billion in 1997.[1] Including Class III American Indian casinos,[2] 1997 revenues totaled $26.3 billion, or $138 per adult aged 20 or over. Casino industry revenues are now 58 percent as large as the cigarette market, while all forms of gambling are 13 percent bigger.[3] From 1982 to 1997 GDP increased 150 percent, while casino revenues increased more than 530 percent. This rapid casino expansion generated extensive debate about the impact of casinos on many social, economic, and political issues.[4] The casino industry has also become a major lobbying presence. For example, between 1992 and 1997, $100 million was paid in lobbying fees and donations to state legislators.[5] These concerns were sufficiently pronounced that the U.S. Congress established the National Gambling Impact Study Commission in 1996 to exhaustively study casinos. Its final report called for additional research and a moratorium on further expansion.

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[1] Gambling revenue is the net amount of money that the gambling operator extracts from patrons. It equals the "handle" (gross amount wagered—which may reflect the same chip being bet many times before it is ultimately retained or lost) less payouts, prizes, or winnings returned to players. For example, if players place wagers totaling $100,000 on outcomes of a roulette wheel over the course of an evening and $88,000 is returned to them as winnings (some roulette slots are reserved for the house), then operator revenue is $12,000.

[2] According to the Indian Gaming Regulatory Act of 1988, class I gambling consists of "social games solely for prizes of minimal value." Included in Class I gambling are traditional Indian games identified with tribal ceremonies and celebrations. Class II gambling includes bingo and "games similar to bingo." Class III gambling includes "all forms of gaming that are not Class I gaming or Class II gaming" such as blackjack, slot machines, roulette, and other casino-style games.

[3] Cigarette sales were $45 billion in 1997. Gambling revenues were $50.9 billion. See *The United States Gross Annual Wager: 1997*. Supplement to International Gaming and Wagering Business, August 1998, p. 3.

[4] Kindt (1994), Grinols (1996), Henriksson (1996), and Grinols and Omorov (1996) discussed a number of these.

[5] *The Wager*, 2, 39, 1997.

Second, in recent years there has been a growing campaign to litigate recovery of social costs generated by industries whose products are believed to generate harmful externalities. The lawsuits against the tobacco industry highlight the prior importance of data and understanding of the relevant issues. Application of Pigouvian taxes, for example, requires knowledge of the size of the externalities.

Available studies of casinos and crime have reached conflicting conclusions. Albanese (1985), who examined areas around Atlantic City, argued that New Jersey's Crime Casino Act (1977) minimized the increase in crime that would otherwise have occurred.[6] However, Friedman, Hakim and Weinblatt (1989), who studied 64 localities with populations over 1000 near Atlantic City, found that casinos increased violent crimes, burglary and auto theft. Buck, Hakim and Spiegel (1991) confirmed that Atlantic City gambling increased crime rates, while Hsing (1996), working from a cross-section of 48 states, identified higher illegal drug arrests in states that permit gambling. Chiricos (1994) showed that the cities with legalized gambling (Atlantic City, Las Vegas, and Reno) had lower visitor-adjusted crime rates than selected Florida tourist cities.

Nelson, Erickson and Langan (1996), Margolis (1997) and Albanese (1999) were funded by explicitly pro-gambling groups, and as expected, concluded that gambling had no impact on crime.[7] Margolis (1997) focused on Las Vegas, Atlantic City, Reno, and Deadwood, SD, and concluded that crime rates are not due to the presence or proximity of legalized gaming. Albanese (1999) studied the nine largest casino markets and concluded that casinos did not increase embezzlement, fraud and forgery crime rates. Although the paper made conclusions about crime rates, it only used data for arrest rates, and did not mention that one cannot use arrest rates to infer anything about definitive about crime rates. The Florida Department of Law Enforcement (1994) and Florida Sheriffs Association (1994), who both opposed casinos, concluded that crime and drunk driving increased in Atlantic City and Gulfport, Mississippi, as a result of casinos. Thompson, Gazel, and Rickman (1996a) studied county-level panel data from Wisconsin and found that casino gambling significantly increased crime rates in counties with casinos and in adjacent counties.

Because of their conflicting conclusions, different methodologies and samples, there is no clear picture of the effect of casinos on crime. Early studies of Atlantic City were hampered by the small number of years since the introduction of casinos. Non-scientific sampling and very small samples significantly limited comparisons across cities. None of the cited studies used all available data for the United States.[8]

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[6]A special aspect of the crime-casino link is the role of organized crime. Lee and Chelius (1989) interviewed casino managers, union representatives and regulatory officials to evaluate the impact of New Jersey's 1977 law controlling the casino industry and its unions. They concluded that the Casino Control Commission kept casino ownership and management free from organized crime, but only by stringent and unpopular regulations, such as licensing requirements. In contrast, organized crime played a large role in the casino labor unions. According to Frey (1998) the federal government has generally been uninterested in regulating the gambling industry, except when organized crime was involved.

[7]See Wheeler (1999) for an interesting discussion of research funded by the gambling industry.

[8]The Government Accounting Office reported that "in general, existing data were not sufficient to quantify or define the relationship between gambling and crime. It [The National Gambling Impact Study Commission] reported that although numerous studies have explored the relationship between gambling and crime, the reliability of many of these studies is questionable." GAO, 2000, p. 35.

In contrast, we argue that the lack of clarity regarding casinos and crime is not the result of unclear connections between casinos and crime, but the result of limitations in the research used to find those connections. Our paper cuts through the debate about gambling externalities and crime by addressing the research limitations directly. First, we conduct the most exhaustive investigation to date, utilizing a comprehensive county-level crime data set that includes every U.S. county, thereby eliminating sampling concerns. Moreover, we analyze crime effects over time by exploiting the time-series nature of our data, which cover 1977 through 1996. Third, we do not focus on one or two crimes, but examine all seven FBI Index I Offenses (aggravated assault, rape, murder, robbery, larceny, burglary, and auto theft). The first four offenses are classified as violent crimes and the last three as property crimes. Fourth, we are the first to explicitly articulate a comprehensive theory about how casinos could increase and decrease crime. Last, we use the most exhaustive set of control variables, most of which are commonly excluded from other studies. If casinos are correlated with these excluded variables, then previous estimates will suffer omitted variable bias.

We conclude that casinos increase crime. The connection is evident in the raw data and in the econometric analysis. We provide evidence about the social costs of casino-related crime and suggest the magnitude of implied corrective taxation.

The outline of the paper is as follows. In section I we review the theoretical links between casinos and crime. Section II explains our data and Section III examines the casino-crime link with raw data. Section IV presents the basic empirical results. Section V extends the results to border counties. In section VI we use our findings to calculate social costs. Section VII concludes.

I.   The Casino-Crime Link

Previous studies have focused on the empirical question of whether there is a connection between casinos and crime and have neglected precise discussions of how casinos affect crime. We present two reasons why crime could decrease and four reasons why crime could increase.

A.   Theoretical Connections between Casinos and Crime

Casinos may reduce crime directly by improving legal earning opportunities or indirectly through other effects of economic development.

1. Wage Effects: Grogger (1997) argued that increases in wages reduce crime, and Gould, Mustard and Weinberg (1998) showed that increases in employment and wages of low-skilled individuals reduce crime. Therefore, if casinos provide greater labor market opportunities to low-skilled workers, they should lower crime.

2. Economic Development: Casinos may also reduce crime indirectly through economic development. In the Midwest, for example, legislation decriminalizing casino gambling cited economic development as its rationale. Decaying waterfronts and derelict sections of town that once harbored crime may be less amenable

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to it when renovation occurs, streetlights appear, and resident presence increases. The streets near Las Vegas casinos, even at night, are often cited as some of the safest.

Conversely, casinos may increase crime through direct and indirect channels.

1. Economic Development: Casinos may raise crime by harming economic development, the opposite of the indirect effect discussed above. While some commend casinos for bringing development, others criticize them for draining the local economy, attracting unsavory clients, and for outgrowths like prostitution and illegal gambling-related activities.

2. Increased Payoff to Crime: Second, casinos may increase crime by lowering the information costs and increasing the potential benefits of illegal activity. Because casinos attract gamblers and money, there is an increased payoff to crime from a higher concentration of cash and potential victims. A 1996 Kansas City case is illustrative in which a local restaurant owner was followed home, robbed, and murdered in his garage after winning $3,000 at a casino.[9] Many similar stories could be produced in other locations with casinos.

3. Problem and Pathological Gambling: Crime may increase through problem and pathological gamblers. Pathological gambling is a recognized impulse control disorder of the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association. Pathological gamblers (often referred to as "addicted" or "compulsive" gamblers) are identified by repeated failures to resist the urge to gamble, reliance on others to relieve the desperate financial situations caused by gambling, the commission of illegal acts to finance gambling, and the loss of control over their personal lives and employment. Problem gamblers have similar problems, but to a lesser degree. The latent propensity to pathology becomes overt when the opportunity to gamble is provided and sufficient time has elapsed for the problem to manifest. Lesieur (1998) estimated that pathological gamblers are one or two percent of the population and problem gamblers are another two to three percent. A well-cited Maryland study found that 62 percent of the Gamblers Anonymous group studied committed illegal acts as a result of their gambling.[10] 80 percent had committed civil offenses and 23 percent were charged with criminal offenses. A similar survey of nearly 400 members of Gambler's Anonymous showed that 57 percent admitted stealing to finance their gambling. On average they stole $135,000. Total stealing was over $30 million.[11]

4. Visitor Criminality: Crime may rise because casinos attract visitors who are both more prone to commit and be victims of crime. Although this basic effect may occur in other circumstances, such as when a theme park opens, the effect of casinos may be systematically different in important respects because a different clientele may go to casinos than to other tourist resorts. For example, casinos attract a different mix of visitors than many large tourist attractions such as Branson, Missouri (country and western music) whose clientele are disproportionately retired couples or a national park frequented by vacationing families.[12] Also,

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[9] Reno, 1997.

[10] See Maryland Department of Health and Mental Hygiene (1990).

[11] Henry Lesieur from the Institute of Problem Gambling, in testimony before the National Gambling Impact Study Commission, Atlantic City, New Jersey (January 22, 1998).

[12] The three largest single tourist attractions in the Unites States in 1994 were the Mall of America (Bloomington, MN), Disney World (Orlando, Florida), and Branson, Missouri receiving 38 million, 34 million, and 5.6 million visitors, respectively. For comparison, Hawaii received approximately 6 million and Las Vegas received 30.3 million

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more problem and pathological gamblers will visit casinos than other attractions. One anecdotal example of the different clientele casinos attract is the large increases in pawnshops that occur when casinos open. Other tourist areas do not experience similar increases.

These mechanisms should have different impacts across crimes. Improvements in the legal sector, for example, reduce property crime more than violent crime (Gould, Mustard and Weinberg, 1998). If casinos act as magnets for unsavory development then all types of crime may increase. Pathological gamblers will generally commit crime to generate monetary benefits to pay off debts or gamble.[13] Therefore, they would be more likely to commit crimes that generate revenue, like robbery, burglary, larceny and auto theft. Furthermore, if casinos increase criminal activity by problem and pathological gamblers, this increase could be compounded by spillover effects on others (Glaeser, Sacerdote, and Scheinkman (1996)).

The theory also predicts that the effects of casinos will change over time. Reduction of crime through improvements in labor market opportunities will be observed prior to the casino opening. Because casinos take time to build, and low-skilled people may be hired before casino openings, crime reductions could precede the openings. Both the positive and negative economic development theories imply that a casino will have an impact after opening. Over time, the development effects will grow, whether positive or negative. The nonresident effect should appear with the casino's opening, but may also expand with time as more nonresidents are attracted. Effects operating through problem and pathological gamblers will not be felt for the first few years. Enough time must elapse for a gambling habit to develop and the full extent of gambling pathology to be reached. Because crime data are reported annually and casinos could open in a given year as late as December, there may not be a discernible effect on crime rates until several years after they open.

B. Estimation

Casinos can affect crime rates directly through the resident local population and indirectly through the number and type of visitors. Therefore, the total impact requires that both direct and indirect effects be included, as explained in equations (1) and (2), where crime (C_{it}) in county i in year t is a function of the presence of a casino, the number of visitors (V) to the county, and other variables that affect crime (summarized in the term *Other*) where $a, b, c,$ and d are unknown coefficients.

$$C_{it} = aCasino_{it} + bV_{it} + Other_{it} \qquad (1)$$

$$V_{it} = cAttractions_i + dCasino_{it} \qquad (2)$$

visitors in 1994. Visitors per resident were 1,345 for Branson, 436 for Bloomington, MN, 188 for Orlando, and 40 for Las Vegas. Combining visitors with residents, the crime rate per 100,000 visitors plus residents was 187.3 for Las Vegas, 64 for Orlando, 16.4 for Branson, and 11.9 for Bloomington. Thus Bloomington which recieved 7.7 million more visitors than Las Vegas had a crime rate per visitor plus resident less than $\frac{1}{15}$th of the rate for Las Vegas. See Grinols and Omorov, 1996, p. 56.

[13]Continued gambling is often perceived as a way to win back needed money. "Chasing" one's losses is a characteristic of pathological gamblers.

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Visitors in equation (2) depend both on the intrinsic visitor attractiveness of the county (*Attractions*) and the presence of the casino. Coefficient a measures the direct effect of the casino on crime. The indirect effect via visitors is measured through coefficients b and d. Substituting from (2) into (1) gives

$$C_{it} = \beta_i + \delta Casino_{it} + Other_{it} \qquad (3)$$

where $\delta = a + bd$, and $\beta_i = bc\,Attractions_i$. The total effect of the casino on crime, δ, in equation (3), includes the effects on both the local population and visitors. Estimating a in (1) would give only a partial effect because it would not take into account the effect of casinos on visitors.[14] The key to our being able to estimate the full effect is having time series data. Because many studies of the casino-crime relationship used cross-sectional data, they were limited to estimating only a partial effect.

A second analytical issue is whether to use diluted or undiluted crime rates. Should the number of crimes be divided by population—the conventional way to generate the crime rate (undiluted)—or be divided by population *plus* visitors (diluted)? There are four possibilities for research depending on whether one considers total or partial effects, and studies diluted or undiluted crime rates. Some have argued for one combination or another without realizing that the choice is not methodological, but depends on what questions the researcher wants to answer.[15] In this study we are interested in both the direct and indirect (visitor-induced) effects of casinos on crime. We also want to know the costs associated with a change in crime in the host county. We therfore estimate the full, undiluted effect of casinos on crime rates based on a version of equation (3) to be described after we explain the data.

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[14]Ideally we would like to know both a and b to decompose the total effect into the portions generated by visitors and by locals. Because of data constraints, we estimate the total effect d but not a and b separately. Visitor data do not exist at the county level and do not distinguish visitors for different purposes. Both a and b might be estimated using other variables to proxy for the number of visitors, but there are no annual, time-series data at the county level. One possible proxy for future research is the number of hotels and hotel rooms, which exists at the MSA-level and is collected by Smith Travel Research. However, this still leaves the problem of distinguishing casino visitors from noncasino visitors.

[15]A frequently mentioned invalid claim is that to determine the change in probability that a resident would be the victim of a crime, the diluted crime rate should be used. However, knowing what happens to the diluted crime rate does not give the needed information and could even move in the wrong direction. Let s_1 be the share of the resident population P victimized by residents, and let s_2 be the share of the resident population victimized by visitors V. Similarly, let σ_1 be the share of visitors victimized by residents, and σ_2 the share of visitors victimized by visitors. Then the crime rate is $s_1 + s_2 + (\sigma_1 + \sigma_2)\frac{V}{P}$; the diluted crime rate is $(s_1 + s_2)w_P + (\sigma_1 + \sigma_2)w_V$ where w_P and w_V are the share of visitors plus residents made up by residents and visitors, respectively; and the probability of a resident being a crime victim is $s_1 + s_2$. For example, assume that residents do not victimize visitors ($\sigma_1 = 0$), $P = V$, and ($s_2 + \sigma_2$) is smaller than s_1. Without visitors the probability of a resident being victimized is s_1. With visitors it rises to $s_1 + s_2$. The diluted crime rate without visitors is s_1. With visitors it falls to $(s_1 + s_2 + \sigma_2)/2$. Thus in this case the diluted crime rate *falls* while the probability of a resident being victimized *rises*.

II. Data

Between 1977 and 1996 the number of states with some form of casino gambling rose from one to 28.[16] The number of counties with casinos grew from 14 (in Nevada) to nearly 170. By the end of our sample period, twenty-one states permitted casinos on Indian reservations. The Indian Gaming Regulatory Act of 1988 increased the number of Indian casinos by mandating that states allow American Indian gambling on trust lands if the state sanctioned the same gambling elsewhere. The semi-sovereign status of Indian tribes and their management by the Federal Bureau of Indian Affairs gave them greater leverage in their dealings with the states.

A. Crime Statistics and Control Variables

Our sample covered 3,165 U.S. counties from 1977-96. The Federal Bureau of Investigation's Uniform Crime Report[17] provided the number of arrests and offenses for the 7 FBI Index I offenses.[18] With the exception of Alaska, the county jurisdictions usually remained unchanged over our sample period. We used U.S. Census Bureau data to control for demographic characteristics that might affect the crime rate. These controls include population density per square mile, total county population, and population distributions by race, age and sex. Income, unemployment, income maintenance transfers, and retirement data were obtained from the Regional Economic Information System, a component of the Bureau of Commerce. Appendix II provides more information about the data.

B. Casino Locations

The natural operating measure for casinos is gross revenue or profits. Unfortunately, such panel data do not exist—American Indian casinos are not required to report revenues. We therefore used the year a county first had an operating Class III gambling establishment, including riverboat casinos, American Indian casinos, land-based casinos, and in the case of Florida and Georgia, "boats to nowhere"—cruises that travel outside

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[16]One must carefully distinguish the date casinos began operating from other dates. Nevada (1931) legalized commercial casino gambling prior to the start of our sample, but in other states there were sometimes lags between the legislation authorizing casinos and the opening of operations. Within a state, different counties acquired casinos at different times. Also, bingo halls operated by American Indians converted to Class III gambling during our sample. We use the date Class III gambling operations first began in the county. The following states began some form of casinos gaming during our sample: Arizona (1992), Connecticut (1993), Colorado (1991), Delaware (1995), Florida (1982), Georgia (1995), Idaho (1993), Illinois (1991), Indiana (1995), Iowa (1991), Kansas (1996), Louisiana (1993), Michigan (1993), Minnesota (1991), Mississippi (1992), Missouri (1994), Nebraska (1993), New Jersey (1978), New Mexico (1990), New York (1993), North Carolina (1995), North Dakota (1993), Oregon (1993), South Dakota (1989), Texas (1993), Washington (1992), Wisconsin (1991) and West Virginia (1994).

[17]U.S. Department of Justice, Federal Bureau of Investigation. *Uniform Crime Reports: County-level Detailed Arrest and Offenses Data, 1977-1996*. Washington, D.C.: U.S. Department of Justice, Federal Bureau of Investigation. Ann Arbor, MI: Inter-university Consortium for Political and Social Research (distributor).

[18]See Appendix I for the definitions of the crimes.

Table 1: Demographic and Crime Data: Casino vs Noncasino Counties

Variable	Mean	Standard Deviation	Sample Size	Mean	Standard Deviation	Sample Size
	CASINO COUNTIES			NONCASINO COUNTIES		
Population	148,319	293,792	3,313	73,310	252,150	59,273
Population Density	208	501	3,313	217	1,459	59,265
Area (Square Miles)	2,060	3,132	3,313	1,010	2,880	59,280
Personal Income	11,407	2,657	3,313	10,805	2,619	59,260
Unemployment Ins.	79	55	3,313	64	51	59,244
Retirement Compensation	10,787	6,545	3,313	9,833	6,244	59,248
Aggravated Assault	259	276	3,072	188	245	54,724
Rape	29	27	3,009	20	32	54,055
Murder	6	9	3,081	6	10	54,801
Larceny	2,537	1,428	3,081	1,741	1,939	54,795
Burglary	1,063	668	3,081	771	1,109	54,792
Robbery	82	135	3,081	44	143	54,796
Auto Theft	267	263	3,081	167	277	54,800

U.S. boundary waters to gamble, and that contain primarily U.S. participants. Not all forms of gambling qualify as a casino. For example, Montana has thousands of small gambling outlets that offer keno or video poker, many of which are in gas stations along the highway. Also, California has many card houses, some of which are illegal. These establishments are distinct from casinos in size and type of play.

We first contacted state gaming authorities. In cases like Washington, this was an expeditious way to ascertain the first year a casino opened. However, even the central gaming authorities and Indian affairs committees often lacked information on Indian casinos. In most states, therefore, we called each casino to obtain its opening date or first date of Class III gambling if it had previously been a bingo hall, etc. We also used lists from the Casino City website, www.casinocity.com, which lists casinos in every state. This list was verified against the annually-produced *Executive's Guide to North American Casinos.*

III.   Assessing the Role of Casinos

With the exception of Nevada, U.S. casinos opened after 1977. We turn first to the raw crime data as they relate to casino and noncasino counties and then describe our research.

A. The Raw Data

Table 1 presents summary crime, income, and population statistics for casino and noncasino counties (counties with no casino in any year of the sample). Casino counties had higher population, land area and income. Crime rates are also higher for these larger counties, as one would expect.

Figure 1: Changes in Crime and Casino-Counties: 1977-1998
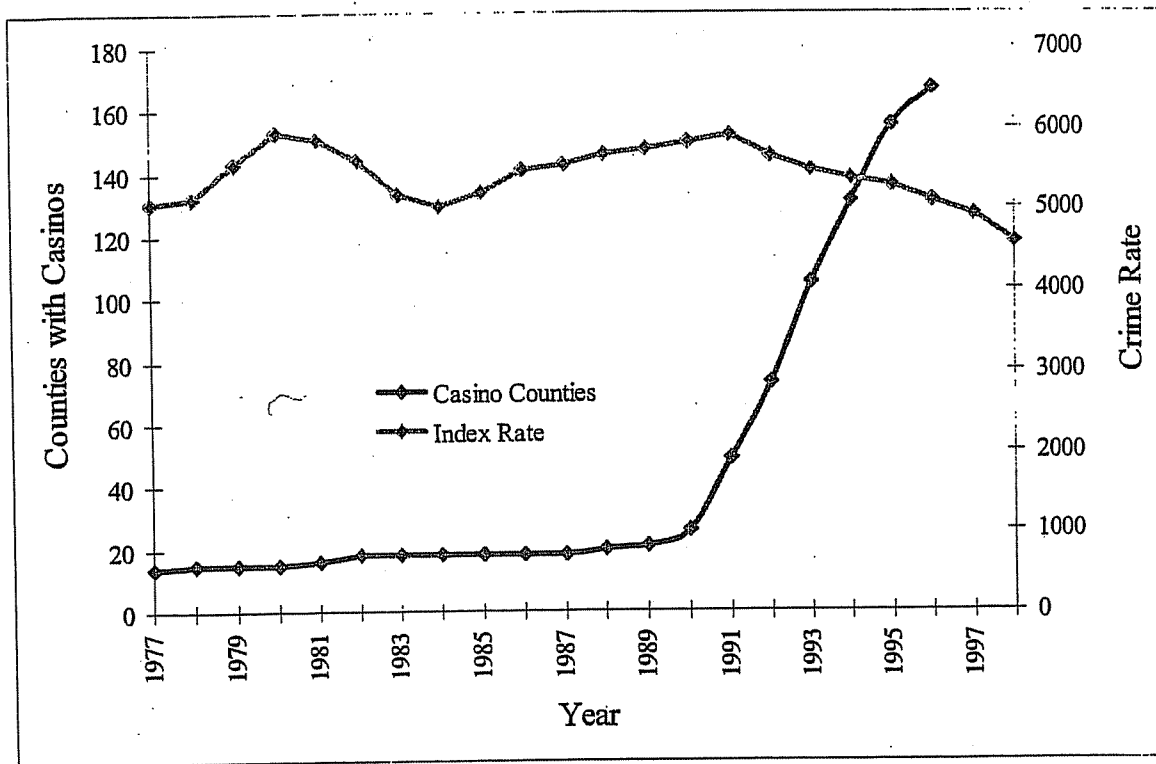
Figure 1 shows the aggregate relationship between the number of counties with casinos and the crime rate. From 1977 to 1990, when the number of casinos was relatively constant, the crime rate fluctuated. However, when counties with casinos increased rapidly from 26 to 167 between 1990 and 1996, the crime rate dropped substantially. This contemporaneous casino growth and crime reduction has been used by some to suggest that casinos reduced crime. For example, Margolis (1997) stated, "crime rates in Baton Rouge, LA have decreased every year since casino gaming was introduced." However, such conclusions are not justified because many regions in the country have experienced falling crime rates since 1991. Therefore, it is more appropriate to compare the magnitude of the decreases between casino and noncasino counties.

Figures 2 and 3 plot property and violent crime rates for casino and noncasino counties. The data are indexed so that 1982 = 100. Because data for Florida are missing in 1988 and 1996, Florida is shown

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Figure 2: Property Crime Rates: 1977-96

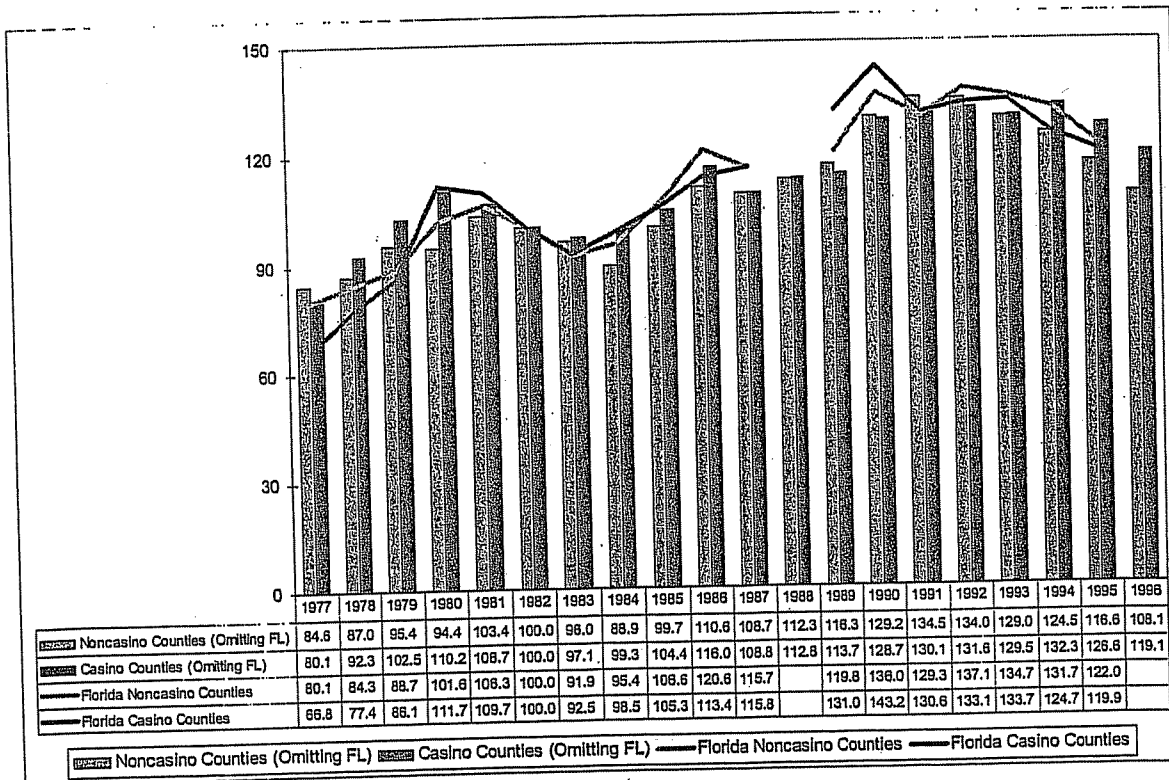|	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Noncasino Counties (Omitting FL)	93.0	91.4	98.5	104.7	104.1	100.0	92.8	87.2	92.3	96.4	97.2	97.5	98.3	98.7	99.7	95.2	88.8	87.2	85.1	82.1
Casino Counties (Omitting FL)	87.7	94.0	101.4	109.5	107.5	100.0	95.7	93.8	97.5	102.2	102.5	104.4	105.0	105.2	100.3	97.8	93.0	96.4	95.0	93.7
Florida Noncasino Counties	89.8	95.3	100.8	112.2	110.3	100.0	90.3	89.3	99.6	109.0	110.9		114.0	112.2	108.3	105.6	102.4	102.2	95.8	
Florida Casino Counties	88.1	86.2	95.4	108.6	106.2	100.0	90.9	92.2	103.8	111.9	119.5		123.4	119.2	113.8	111.7	113.8	113.3	108.2	

Noncasino Counties (Omitting FL)   Casino Counties (Omitting FL)   Florida Noncasino Counties   Florida Casino Counties

separately.[19] Florida is of separate interest because it was the first state after New Jersey to acquire casinos. In general the trends in crime rates between the two groups of counties are similar. Two features are worth noting, however. First, after 1991 casino- and noncasino-county property crime rates diverge, and crime falls more in noncasino counties than in casino counties. The 1991-96 period is when most casino counties acquired their casinos. Figure 3 shows a similar divergence for violent crime after 1993. Second, Florida casino counties show lower crime rates than the state's noncasino counties in the early years of the sample (before casinos were present) but higher crime rates at the end of the period.[20] Figure 4 highlights this cross-over. For example, total crime in 1977 was 6 percent lower in casino than noncasino counties. By 1995, however, it was 11 percent *higher*. For every crime except robbery, casino counties had lower crime rates in 1977, and higher crime rates in 1995. The robbery rate in casino counties in 1977 was 25 percent lower than in noncasino counties; by 1995 it was only 14 percent lower.

Many states have American Indian casinos governed by state compacts negotiated under the Indian Gaming Regulatory Act of 1988. Most compacts were signed, and Indian casinos opened, after 1992. In

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[19]The state legislature changed the Florida crime reporting process from summary-based to incident-based on Jan 1, 1988. In 1995 Florida switched back to summary-based reporting. In the transition years, data are missing.

[20]Florida acquired its first "boat-to-nowhere" casino in 1982. Other counties acquired them in succeeding years.

Figure 3: Violent Crime Rates: 1977-96

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Noncasino Counties (Omitting FL)	84.6	87.0	95.4	94.4	103.4	100.0	98.0	88.9	99.7	110.6	108.7	112.3	116.3	129.2	134.5	134.0	129.0	124.5	116.6	108.1
Casino Counties (Omitting FL)	80.1	92.3	102.5	110.2	108.7	100.0	97.1	99.3	104.4	116.0	108.8	112.6	113.7	128.7	130.1	131.6	129.5	132.3	126.6	119.1
Florida Noncasino Counties	80.1	84.3	88.7	101.6	108.3	100.0	91.9	95.4	106.6	120.6	115.7		119.8	136.0	129.3	137.1	134.7	131.7	122.0	
Florida Casino Counties	66.8	77.4	86.1	111.7	109.7	100.0	92.5	98.5	105.3	113.4	115.8		131.0	143.2	130.6	133.1	133.7	124.7	119.9	

Noncasino Counties (Omitting FL)   Casino Counties (Omitting FL) — Florida Noncasino Counties — Florida Casino Counties
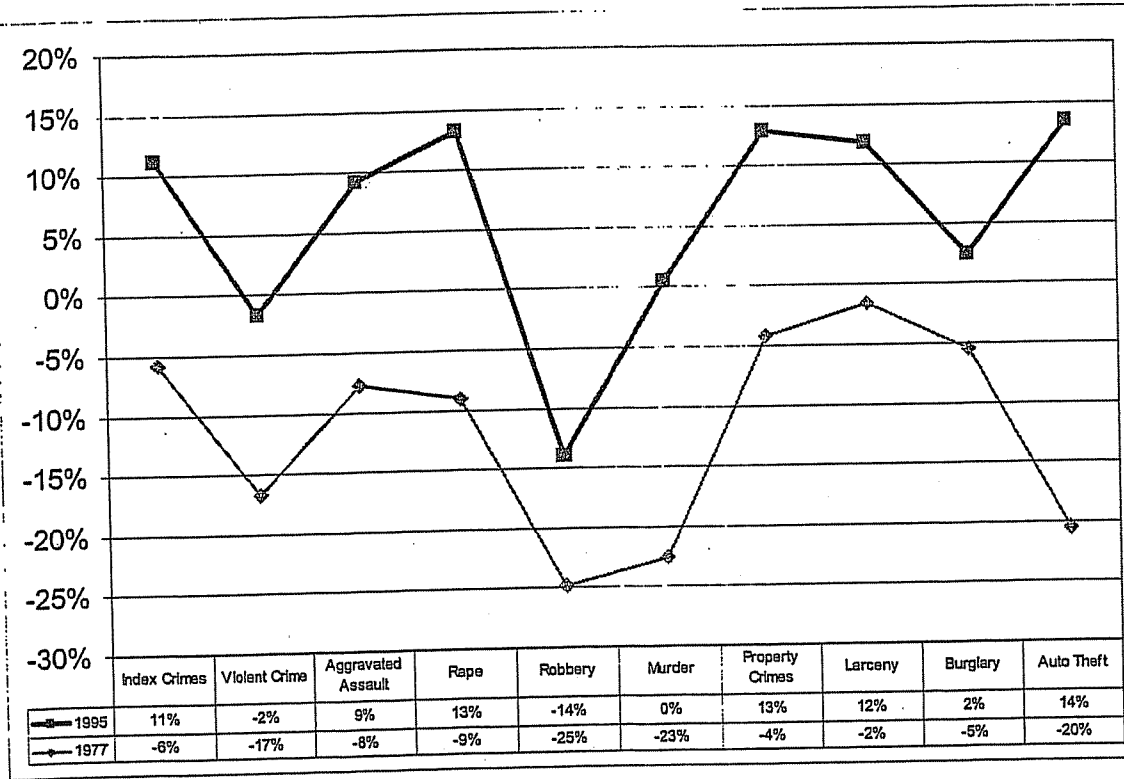
some states (Connecticut, Minnesota, and Wisconsin are examples) Indian casinos are the sole type of casino. Figure 5 computes crime rates in Indian compact counties as a percent of the equivalent crime rate in noncompact counties for 1987 (the year before the Indian Gaming Regulatory Act was passed), in 1992 and 1996. Crime rates between 1987 and 1992 changed little relative to other counties, but between 1992 and 1996, the period of greatest increase in compact casinos, crime in compact counties rose noticeably in all categories.

Figure 6 presents the casino county data centered on the year of opening, where we set the average crime rate for the four years prior to casino opening to 100. Crime rates were very stable prior to opening, slightly lower in the year of casino introduction, returned to approximately average levels for the next three years and increased thereafter. By the fifth to seventh year after introduction, aggravated assaults were 50 to 95 percent higher, robbery was 71 to 119 percent higher, larceny was 9 to 41 percent higher, and auto theft and burglary also showed increases. Only rape was approximately unchanged at 7 percent lower to 12 percent higher.

When grouped around the year of opening the data suggest a connection between casinos and higher crime rates and the need to estimate lead and lag structures to correctly capture and identify the relevant

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Figure 4: Casino County Crime Rates as Percent Deviation from Noncasino County Rates: Florida 1977 and 1995

	Index Crimes	Violent Crime	Aggravated Assault	Rape	Robbery	Murder	Property Crimes	Larceny	Burglary	Auto Theft
1995	11%	-2%	9%	13%	-14%	0%	13%	12%	2%	14%
1977	-6%	-17%	-8%	-9%	-25%	-23%	-4%	-2%	-5%	-20%

time dependencies. The lead structure will also show that crime rates in casino and non-casino counties were not different prior to the opening dates.

B. Separating Casino Effects from Other Effects, Identifying Timing
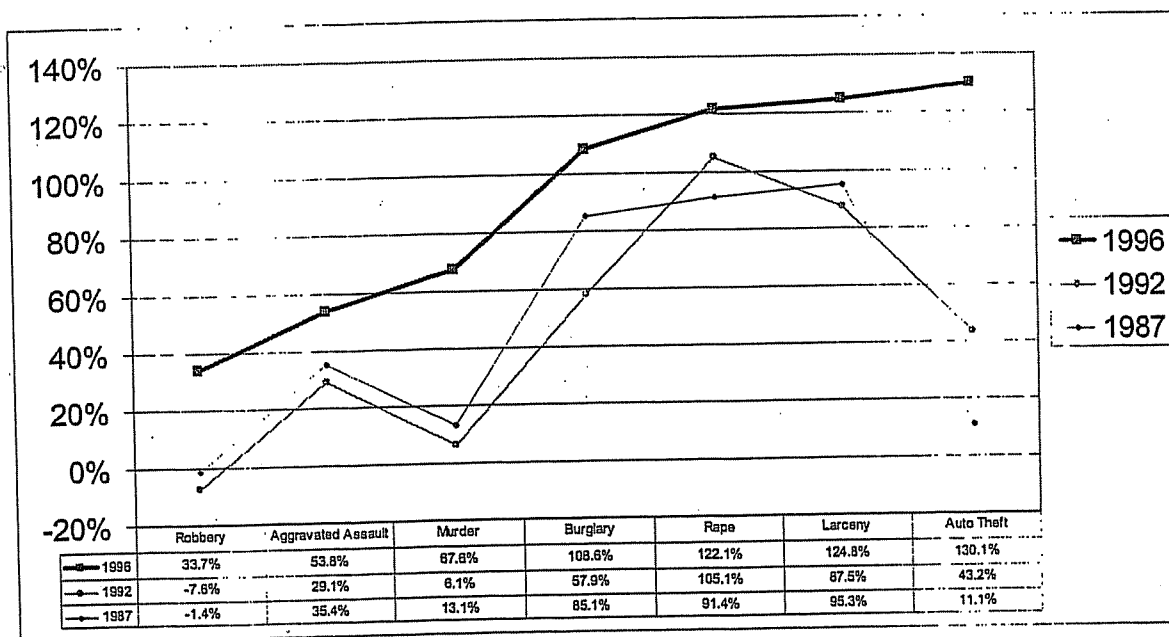
The crime model we estimated was

$$C_{it} = \alpha + \beta_i + \gamma_t + \delta L_{it} + \theta A_{it} + \varepsilon_{it} \tag{4}$$

where C_{it} is the crime rate (offenses per 100,000 people) of county i in year t. β_i is a county-level fixed effect that controls for unobserved characteristics across counties. The time fixed effect, γ_t, controls for national crime rate trends. L_{it} is a 12×1 vector of the casino opening dummy. It includes 4 leads and 7 lags of the opening variable, and captures the intertemporal effects outlined earlier.

A_{it} is a large vector of control variables and includes population density, the percent of the population that was male, percent that was black, percent that was white, and the percent between the ages of 10-19,

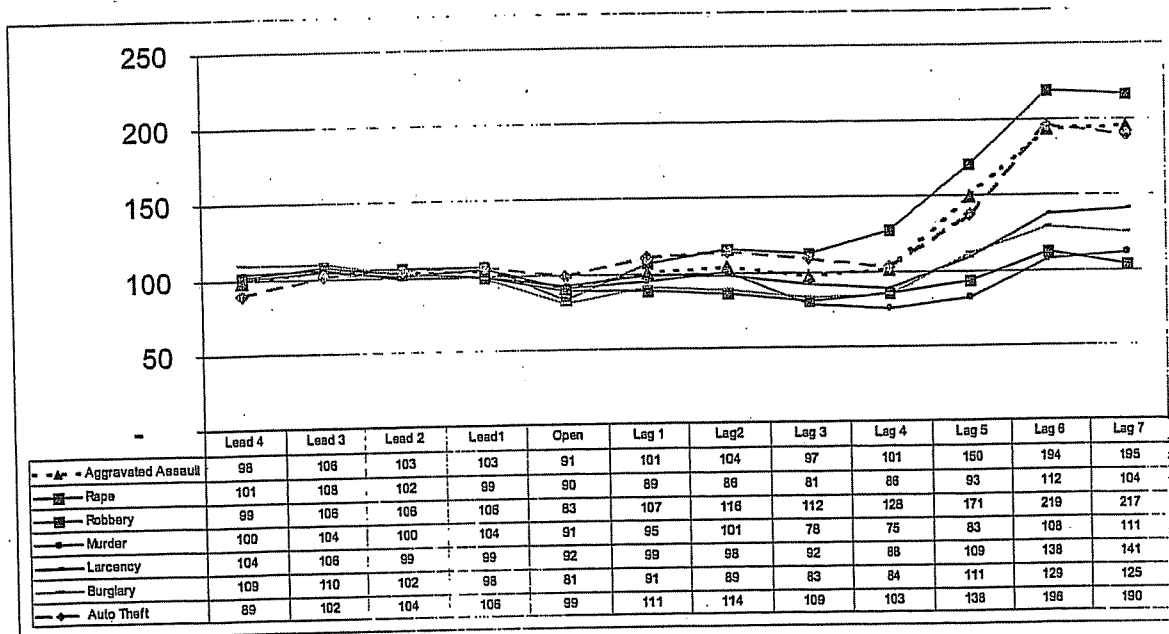Figure 5: Indian Compact County Crime Rates as Percent Deviation from Noncompact County Rates

	Robbery	Aggravated Assault	Murder	Burglary	Rape	Larceny	Auto Theft
1996	33.7%	53.8%	67.6%	108.6%	122.1%	124.8%	130.1%
1992	-7.6%	29.1%	8.1%	57.9%	105.1%	87.5%	43.2%
1987	-1.4%	35.4%	13.1%	85.1%	91.4%	95.3%	11.1%

20-29, 30-39, 40-49, 50-64, and over 65.[21] Economic variables in A_{it} are real per capita personal income, real per capita unemployment insurance payments, real per capita retirement compensation per old person, and real per capita income maintenance payments. A_{it} also includes a dummy variable indicating whether the county honored a "shall issue" right giving citizens the authority to carry a concealed firearm upon request, and two years of leads and four years of lags on the shall issue dummy. A_{it} contains 22 explanatory variables. ε_{it} is the regression error. Including leads and lags, the regression has 54 explanatory variables. This was expanded to 66 when analyzing the border counties. Excluding observations with missing data reduced the sample size in most regressions from 63,300 $(3,165 \times 20)$ to about 58,000.

The effect of a casino on crime depends on δ. A positive coefficient δ indicates that the introduction of casinos increased crime and a negative coefficient indicates that it reduced crime. We independently estimated each lead and lag of the casino opening year without cross restrictions to give separate estimates of the timing of changes. We weighted observations in the regression by county population.

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[21]The remaining groups were Hispanics and those between 0 and 9 years.

Figure 6: Crime Rates Before and After Casino Opening - All Casino Counties Except Florida

	Lead 4	Lead 3	Lead 2	Lead1	Open	Lag 1	Lag2	Lag 3	Lag 4	Lag 5	Lag 6	Lag 7
Aggravated Assault	98	108	103	103	91	101	104	97	101	150	194	195
Rape	101	108	102	99	90	89	86	81	86	93	112	104
Robbery	99	106	106	106	83	107	116	112	128	171	219	217
Murder	100	104	100	104	91	95	101	78	75	83	108	111
Larcency	104	106	99	99	92	99	98	92	88	109	138	141
Burglary	109	110	102	98	81	91	89	83	84	111	129	125
Auto Theft	89	102	104	106	99	111	114	109	103	138	196	190

IV. Results

Table 2 reports the results for the coefficients of interest: four years of leads, the opening, and seven years of lags of the casino opening variable.[22] t-statistics are shown below the estimated coefficients. All coefficients refer to changes per 100,000 people. For example, the coefficient of Lag 4 in the column labeled "Aggravated Assault" is 50.29 and indicates that the aggravated assault rate was higher by 50.29 offenses per 100,000 population four years after a casino opened in the county. The number of observations for each regression varied from 57,029 to 57,847. R^2 was between .70 and .89.

The reported regressions exclude measures of law enforcement activity such as conviction rates, sentence lengths, arrest rates, annual police employment and law enforcement expenditures for two reasons. First, including them would have significantly limited the number of counties with available data. Conviction rates and sentence lengths are available for only four states (Mustard 2000), and annual police employment is unavailable at the county-level. The trade-off was one of reduced efficiency from loss of data versus omitted variable bias that would lead us to understate the true impact of casinos on crime.

Using the arrest rate is problematic because it is undefined when there are 0 offenses for a given crime

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[22]The results for the 588 other coefficients and t-statistics are not included in the interest of space, and because they are used as controls and we are primarily interested in the casino-related variables. The full regression output is available from the authors on request.

type.[23] Many small counties in our sample record no offenses even for property crimes for a given year, and large counties frequently have no offenses for murder and rape. Therefore, including the arrest rate eliminated many observations, reducing our sample by over 30,000 observations for some offenses.

Table 2: Crime Rate Regressions - Casino Leads and Lags

	Aggravated Assault	Rape	Murder	Larceny	Burglary	Robbery	Auto Theft
Lead 4	5.44	0.42	0.87	243.89	36.68	9.91	26.40
	(0.758)	(0.5)	(3.225)	(6.113)	(1.399)	(1.672)	(2.222)
Lead 3	3.14	0.76	0.68	200.61	34.09	3.79	74.62
	(0.438)	(0.902)	(2.506)	(5.031)	(1.301)	(0.64)	(6.286)
Lead 2	−4.32	0.21	0.57	89.83	19.43	8.67	117.84
	(−0.602)	(0.251)	(2.098)	(2.25)	(0.741)	(1.462)	(9.916)
Lead 1	−8.02	−0.72	1.20	88.05	−0.54	10.51	137.59
	(−1.132)	(−0.865)	(4.513)	(2.236)	(−0.021)	(1.796)	(11.735)
Open	0.25	−0.46	1.38	172.08	−17.60	14.94	177.33
	(0.033)	(−0.529)	(4.901)	(4.138)	(−0.644)	(2.418)	(14.323)
Lag 1	3.75	1.06	1.36	235.81	40.84	34.96	210.29
	(0.505)	(1.24)	(4.876)	(5.719)	(1.508)	(5.706)	(17.131)
Lag 2	−7.86	0.29	1.34	67.04	−41.24	41.18	189.68
	(− 0.988)	(0.316)	(4.486)	(1.516)	(−1.42)	(6.266)	(14.407)
Lag 3	25.81	4.30	1.18	99.52	−31.12	74.06	242.09
	(2.758)	(4.044)	(3.362)	(1.914)	(−0.911)	(9.586)	(15.641)
Lag 4	50.29	7.61	0.59	289.82	83.67	54.65	198.85
	(3.881)	(5.179)	(1.216)	(4.03)	(1.771)	(5.113)	(9.287)
Lag 5	112.55	11.64	−0.54	771.74	356.68	68.07	331.08
	(7.132)	(6.47)	(−0.909)	(8.775)	(6.173)	(5.208)	(12.645)
Lag 6	88.28	11.26	−1.47	777.38	201.59	9.99	359.71
	(4.79)	(5.364)	(−2.117)	(7.568)	(2.988)	(0.655)	(11.763)
Lag 7	109.50	10.98	−0.98	1092.90	226.56	20.91	377.81
	(5.704)	(5.021)	(−1.351)	(10.214)	(3.223)	(1.315)	(11.861)
N	57761	57029	57847	57841	57838	57842	57846
F	364.9	121	83.01	138.34	352.27	132.76	327.45
Prob > F	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R-squared	0.825	0.741	0.762	0.800	0.697	0.891	0.851

Second, and more important, by excluding these variables the reported regressions understate the true impact of casinos on crime. The Table 2 regressions with the arrest rate included displayed increased post-opening casino coefficients.[24] This is consistent with information from law enforcement officials who reported that enforcement expenditures increased substantially when casinos opened, and provides support for the evidence that omitting these variables understates the crime effect. Stephen Silvern (FBI in Atlantic City) documented that expenditures for the Atlantic City Police Department and Prosecutor's Office grew much more rapidly in the late 70s and early 80s than similar expenditures in the rest of the state and nation (Gaming Conference 1999). The Director of the Indiana Gambling Commission reported that Indiana hired an additional 120 state troopers when the casinos opened in 1995.[25] Allocations for police services also rose substantially in New Orleans upon introduction of casinos.[26] Law enforcement officials strongly

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[23]See Lott and Mustard (1997) and Levitt (1998) for more detailed discussions of problems with arrest rates.
[24]We do not present the coefficients in a table because the results are qualitatively similar to the Table 2.
[25]John Thar, Director of the Indiana Gambling Commission, report at Gaming Conference 1999.
[26]Lt. Joseph P. Lopinto, Jr., Commander of the Gambling Section of the New Orleans Police Department reported

emphasize that to maintain public safety it is necessary to increase spending on enforcement resources when casinos open. Because we are unable to accurately measure these additional resources that reduce crime, the estimates without law enforcement variables understate the effect of casinos on crime and form a lower bound on the impact.

A. Violent Crime

Figure 7 displays the information for violent crime from Table 2. The horizontal axis plots the casino opening leads and lags and the vertical axis plots the coefficient estimates. Figure 7.1, for example, shows the effect of casino opening on aggravated assaults for the four years before and seven years after opening. The plotted vertical lines show the 99 percent confidence intervals, the range within which the regression indicates the true coefficient should lie with 99 percent probability.

Figure 7: Casino Effects - Violent Crime
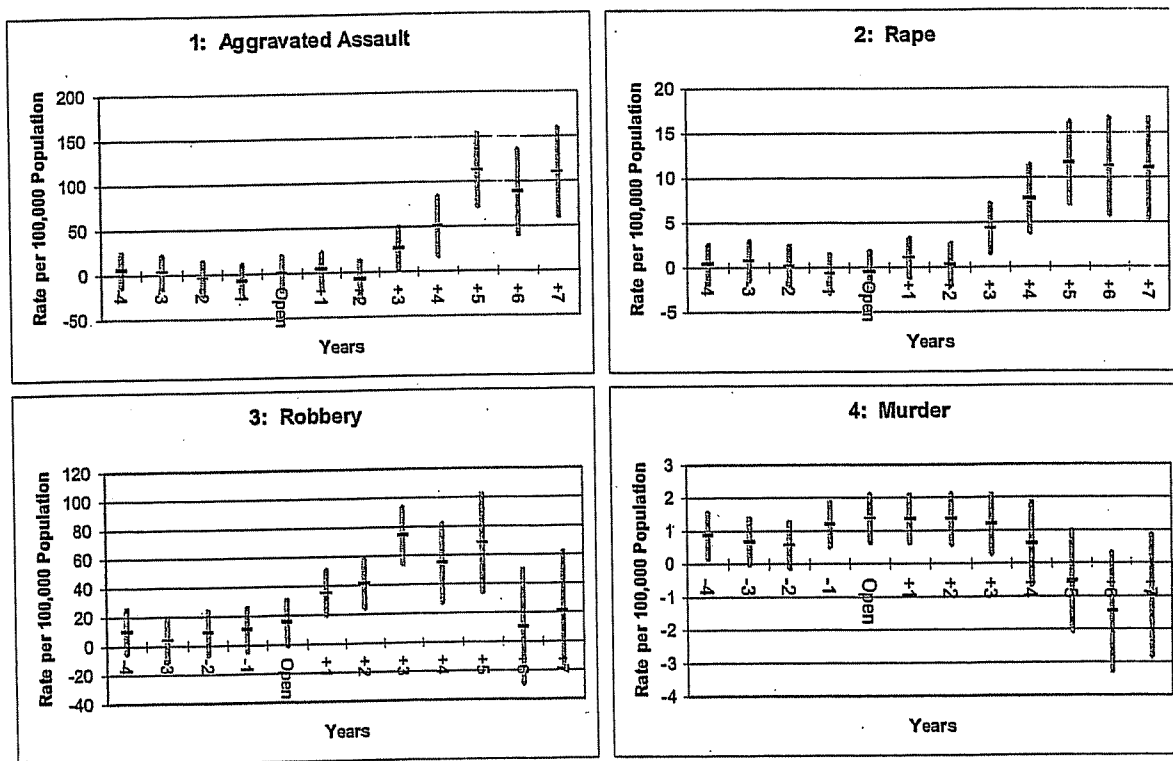
For aggravated assault, the coefficients for all four years of leads, the year of opening, and the first two

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that his department has been significantly resource constrained since the opening of New Orleans' casinos and the resulting increase in demand for police services. Gaming Conference 1999.

years after the casino opening are not significantly different from zero. However, coefficients for the third and subsequent year after opening are significantly above zero, and the trend rises. By the third and subsequent year casinos are a statistically significant contributor to increased assault rates. The estimated high occurs in the fifth year after opening, when the aggravated assault rate is 112 higher per year.[27]

Although the point estimates for years 3 through 7 after opening are each statistically significant at better than the 1 percent level, the number of counties with casinos open three to seven years is 91, 59, 35, 12, and 7, respectively. Because the number of counties whose casinos opened 6 and 7 years before is small, we treat the estimates for the sixth and seventh year lags cautiously.

Figure 7.2 for rape shows a similar pattern for aggravated assault. Coefficients are not significantly different from 0 prior to the opening. However, they are positive and significant in the third year after the casino opened, and rise thereafter. A county that introduces a casino might expect a negligible impact in the first two years after opening, but a higher rape rate by 8 to 12 incidents per 100,000 population in the fourth and fifth years after opening. The pattern for robbery (Figure 7.3) is similar to aggravated assault and rape with two exceptions. First, the increase in robbery began immediately. Second, the estimated coefficients for the sixth and seventh years after the casino opened cannot be distinguished from zero. One potential explanation is that the effect of casinos on robbery dies out in the sixth and seventh years after opening. Another is that the sample does not have enough observations with casinos opening six or seven years previously to distinguish an effect for this type of crime.

As expected, the impact of casinos on murder is the smallest of all offenses. Figure 7.4 shows there are significant coefficients only for the year before opening through the third year after opening, and implies about 1.3 additional murders for casino counties. However, casino counties have slightly higher murder rates (by about 0.7) before opening, and the change from before to after is not statistically significant. Gambling-related murders and deaths are frequently high profile cases. They include cases such as the disgruntled gambler who killed a casino teller when he tried to retrieve his gambling losses, a spouse who fought over the other's gambling losses and was murdered, a parent's gambling leading to the death of a child and similar tales.[28] However, such murders are not frequent and systematic enough to merit a strong assertion about the impact of casinos on murder. Because murder is the least frequently committed crime and most counties have zero murders, murder rates typically have high variance, which makes it difficult to conclusively identify effects.

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[27]The estimated pattern of crime increase is unlike the typical pattern of visitor increases after casino opening. Grinols and Omorov (1996) showed the number of visitors to Illinois casinos typically rises immediately after opening and reaches equilibrium levels after six months or fewer.

[28]See Jeffry Bloomberg, Prepared Statement, Hearing Before the Committee on Small Business, House of Representatives, 103rd Congress, Second Session, 21 September 1994, Serial No. 103-104, Washington, D.C.: USGPO, p. 47. Accounts of the more spectacular gambling-related murders and deaths (most often suicides) often appear in the press. *USA Weekend*, February 10-12, 1995, p. 20, for example, describes a man killing his wife and beating up his daughter in a fight over his gambling away thousands of dollars. The Associated Press September 3, 1997, reported on the 10-day-old infant who died of dehydration after being left in a warm car for about seven hours while her mother played video poker in South Carolina.

B.   Property Crime

Figure 8 displays the Table 2 coefficients for property crimes, which are committed far more frequently than violent crimes. Figure 8.1 displays a pattern similar to rape, robbery and aggravated assault (Figures 7.1, 7.2, and 7.3)—relatively little impact until the fourth year when crime rates increase consistently. The larceny coefficients increase from 67 in the second year after opening to over 1000 by the seventh year. This rising impact indicates that the negative effects of the casino-crime link outweigh positive impacts over time, and is consistent with the negative development argument that it takes a while for gamblers to exhaust personal resources before resorting to larcenous crime. An alternative explanation of the delayed impact is that casinos have an immediate impact on crime, but that impact is netted out by a large increase in police resources, which are typically significantly increased when casinos open, but do not maintain the same rate of growth over time. The slightly more immediate impact of casinos on violent crime observed in Figure 7 may be explained in terms of *imported* criminals. It may take less time to habituate to a new casino's location than for people to exhaust their resources.

Figure 8: Casino Effects - Property Crime

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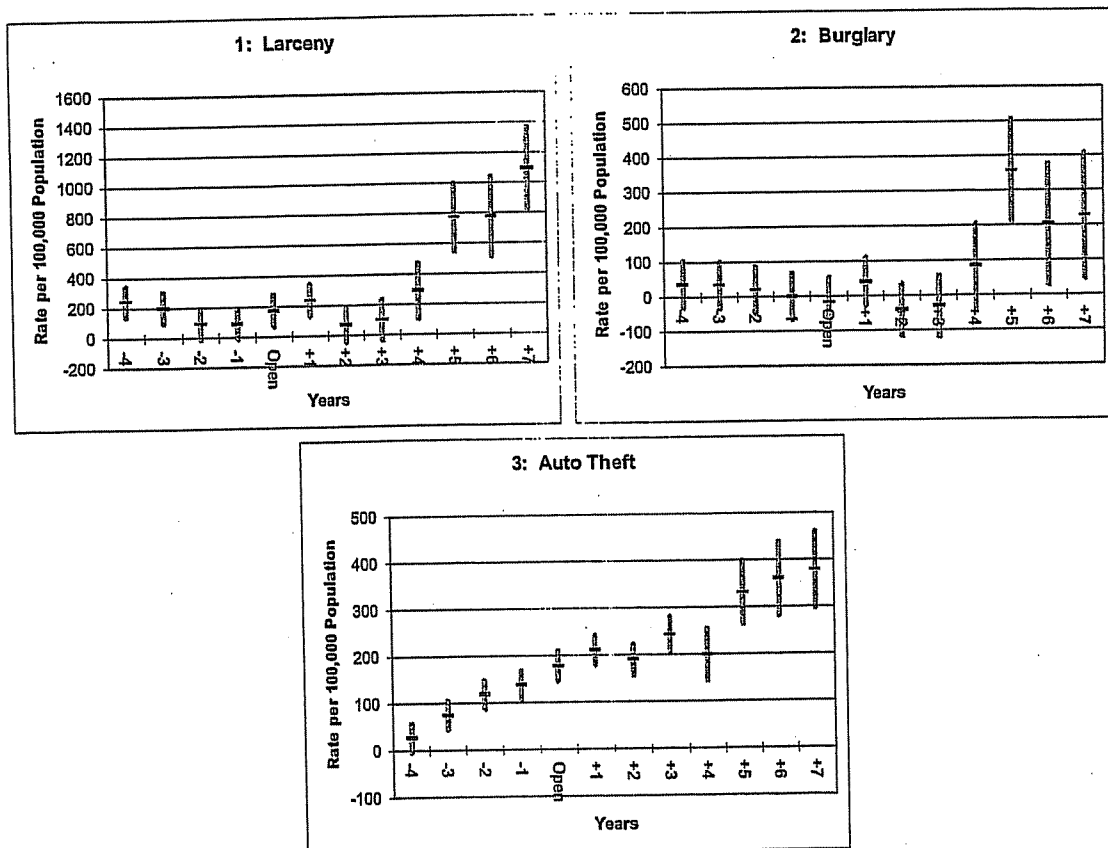
Figure 8.2 for burglary is very similar to larceny, robbery, assault and rape. Burglary shows no noticeable impact of casinos until the fourth year after casino opening. The five, six and seven year lag estimates are significant at between 200 and 400 additional offenses, again indicating that the negative effects of casinos dominate the positive effects over time.

Figure 8.3 for auto theft presents a different picture. It is the only crime that showed a rising trend before casino opening, which continued unabated through the seventh year after opening.[29] Figure 9 shows that casino counties did not experience the same decreases in auto thefts that noncasino counties experienced after 1991, when the number of casinos increased rapidly.[30] Thus, one reason for the auto theft results is that casinos play a role in causing auto thefts not to fall as fast as they did in noncasino counties.

Figure 9: Auto Theft Crime Rates: Casino vs. Noncasino Counties

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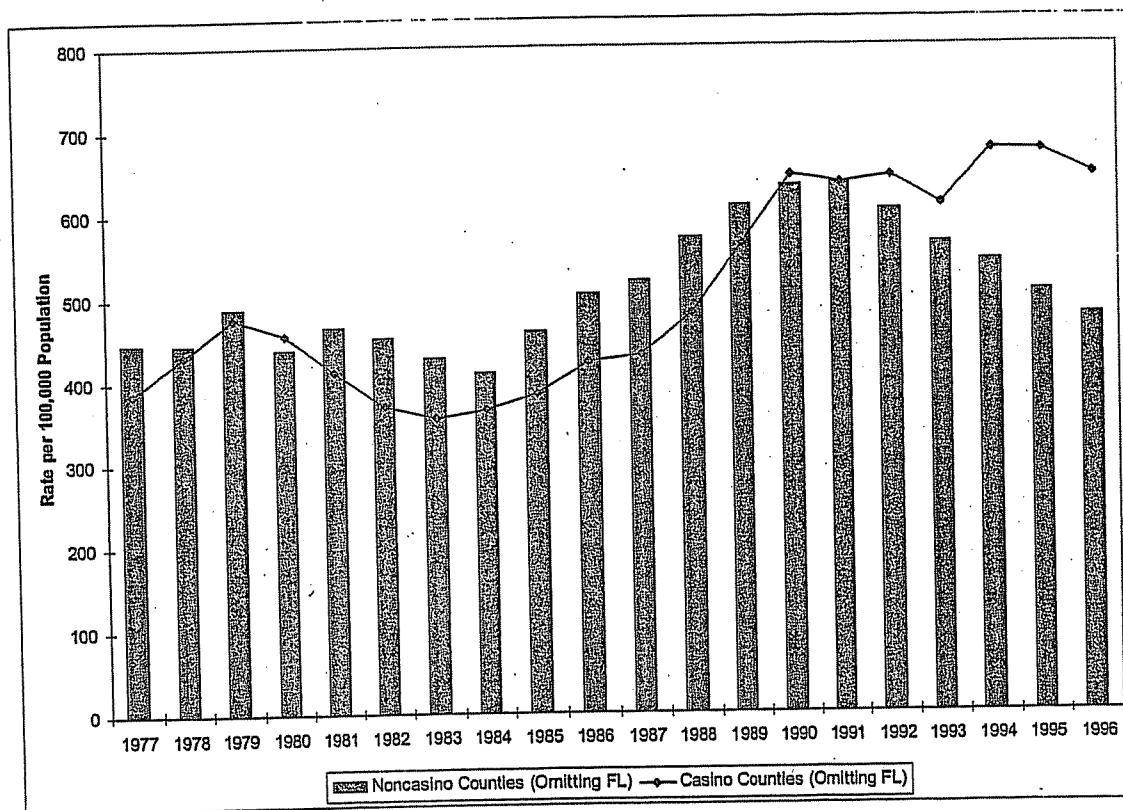
[29] Again, we have only 12 observations of counties that had a casino open six years earlier and 7 observations of counties that had a casino open 7 years earlier. Robustness checks consisting of removing observations for the states making up these observations one state at a time did not materially affect the pattern shown.

[30] Note that a similar divergence in Florida started in 1984 and grew after that, consistent with Florida casino openings. The first Florida casinos opened in two counties in 1982, two more opened in 1988, and the rest opened between 1990 and 1995.

A second factor may be that we were unable to control for Lojack, an electronic tracking system that allows police to quickly locate and recover stolen autos. Ayres and Levitt (1998) showed that Lojack accounted for a significant reduction in auto thefts in the 1990s. Because cities that implemented Lojack generally do not have casinos, we may overstate the effect of casinos on auto theft.[31] It is also possible that Lojack's use is not yet sufficiently widespread to greatly affect our estimates.

To summarize our empirical results, the casino opening lead variables indicate that casino and noncasino counties have similar crime patterns prior to the opening of casinos. Casinos are not more likely to be placed in areas that have systematically different crime environments than other regions. After casinos open the crime trends differ: casino-county crime rates increase relative to the noncasino-county rates. The differences typically begin a few years after casino opening and increase over time. These characteristics are consistent with the predicted effects outlined in the theory. For example, crime is generated by problem and pathological gamblers who, according to clinical research, take about two or three years to exhaust alternative resources before they commit crime. Furthermore, the most significant effects are for offenses where obtaining resources is the primary motivation of the crime. Not unexpectedly, the only crime that shows no effect is murder, which has the least clear relationship to casino gambling.

Studies that did not have large data sets, a sufficient number of years of observations after casino opening, and that did not allow for the impact to change over time have missed these effects. The evidence presented thus far suggests that casinos increased crime, but provides no information about whether casinos created crime or redistributed it from one area to another. We address this question next.

V. Do Casinos Create Crime or Attract It from Elsewhere?

The previous section provided strong evidence that the introduction of casinos is associated with an increase in crime rates in the host county beginning approximately three years subsequent to introduction. Grouping crime into property and violent categories, the estimates suggest that after six years, 8 percent of property crime and 10 percent of violent crime in casino counties is due to casinos.[32]

Do casinos create crime, or merely move it from other locations? In this section, we address this important question by examining the crime rates of counties that border casino-counties. When casinos open crime rates in neighboring counties could either decrease, remain the same or increase. The first possibility supports the idea that casinos move crime from adjacent counties but do not create new crime. In the second case adjacent counties experience no change in crime, which indicates that total crime rises and that casinos create crime. The last possibility is that both host and neighbor counties experience increased crime rates, which indicates that casinos create crime that spills over into neighboring areas.

To implement a test strategy, we defined a set of neighbor lead, opening and lag variables, similar to the original set used in Table 2 for the host county. The "neighbor opening" variable took a value of 1 if

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[31]Ayres and Levitt (1998) showed that Lojack had little effect on other offenses, so our results for the other crimes will not be affected.

[32]Section VI. explains the computation of these numbers.

Table 3: Crime Rate Regressions - Casino Neighbor Leads and Lags

	Aggravated Assault	Rape	Murder	Larceny	Burglary	Robbery	Auto Theft
Lead 4	12.59	1.29	-0.07	96.84	-0.66	17.04	1.20
	(3.171)	(2.544)	(-0.490)	(4.382)	(-0.045)	(5.191)	(0.183)
Lead 3	4.80	0.13	-0.05	20.81	-13.92	11.27	-18.73
	(1.217)	(0.256)	(-0.366)	(0.948)	(-0.965)	(3.457)	(-2.870)
Lead 2	19.73	1.00	0.60	71.44	25.63	36.97	8.75
	(5.007)	(2.059)	(4.079)	(3.257)	(1.777)	(11.349)	(1.341)
Lead 1	10.71	0.82	0.60	5.66	10.63	21.51	15.89
	(2.745)	(1.711)	(4.061)	(0.261)	(0.744)	(6.666)	(2.459)
Open	1.40	0.69	0.88	6.82	3.87	4.14	9.37
	(0.355)	(1.442)	(5.926)	(0.310)	(0.267)	(1.267)	(1.430)
Lag 1	4.27	-0.35	0.89	29.63	5.57	12.08	32.95
	(1.027)	(-0.719)	(5.658)	(1.280)	(0.366)	(3.513)	(4.785)
Lag 2	-20.48	-2.56	0.57	-173.26	-70.49	-4.90	-21.59
	(-4.467)	(-4.824)	(3.316)	(-6.790)	(-4.200)	(-1.292)	(-2.844)
Lag 3	13.40	1.08	0.67	-47.63	7.40	6.03	9.86
	(2.566)	(1.765)	(3.403)	(-1.638)	(0.387)	(1.397)	(1.141)
Lag 4	14.74	1.23	0.75	-44.91	42.04	14.42	31.14
	(2.424)	(1.761)	(3.269)	(-1.326)	(1.888)	(2.867)	(3.091)
Lag 5	19.79	5.02	0.37	271.67	140.78	32.73	132.77
	(2.418)	(5.382)	(1.203)	(5.963)	(4.698)	(4.837)	(9.796)
Lag 6	63.08	6.49	0.47	472.50	71.73	34.60	233.09
	(4.981)	(4.493)	(0.981)	(6.699)	(1.546)	(3.303)	(11.109)
Lag 7	41.44	0.57	-0.99	223.20	168.21	48.44	89.83
	(3.547)	(0.430)	(-2.262)	(3.430)	(3.931)	(5.012)	(4.641)
N	57761	57029	57847	57841	57838	57842	57846
F(65,*)	299.7	100.3	70.1	116.1	288.6	112.6	272.5
Prob > F	0.0	0.0	0.0	0.0	0.0	0.0	0.0
R-squared	0.826	0.742	0.763	0.801	0.697	0.892	0.852

a casino opened in an adjacent county in a given year. These twelve new variables increase the number of regressors to 66. The adjacent counties are the relevant unit of measurement for this purpose, because the vast majority of casino patrons come from the local region surrounding the casino. For example, in Illinois over 92 percent of casino customers come from within 75 miles.[33] Therefore, a substantial majority of the visitor movement will be accounted for with the adjacent county technique. A few casinos, most of which are in Nevada, draw their customers from outside their immediate area. However, our estimates do not rely on these casinos to identify the effects, because these casinos opened prior to 1977.

Table 3 shows the estimated effect of casinos on crime rates in neighboring counties. When the neighbor variables were included the host county crime coefficients were virtually unchanged, both in terms of point estimates and statistical significance. The correlation of the host county lead and lag coefficients of casino opening between the two regressions was higher than .99 for aggravated assault, rape, larceny, burglary, and auto theft, and was .985 for murder and .979 for robbery.

The pattern of crime increases in counties adjacent to casino counties showed no evidence of compensating

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[33]Gazel and Thompson, 1996.

reductions in crime and therefore no evidence of crime shifting. For years before the opening of casinos, there is virtually no impact of the casino on crime rates in neighboring counties. Generally, the overal pattern of crime rate influences is similar to the pattern in the host county, with crime increases beginning after three years of casino introduction, but attenuated relative to the host county effect. For example, Figure 10 shows the coefficients for neighboring counties for aggravated assault (thin line) compared to the host county coefficients (heavy line). The crime rate for aggravated assaults in counties neighboring casino host counties is insignificantly different from zero for five out of the first seven years of the sample (four years before casino opening up to two years after opening), but thereafter all of the coefficients are statistically significant and positive. Comparison to the heavier line showing the host county coefficients reveals that in both the host county and neighboring counties there is little impact of the casino until approximately the third year after opening. From that point the crime rate begins to rise, with the crime rate in neighboring counties rising less than in the host county. The pattern in Figure 10 is consistent with a spillover effect for aggravated assault.

Figure 10: Neighbor County Effects: Violent Crime Rates on Vertical Axis
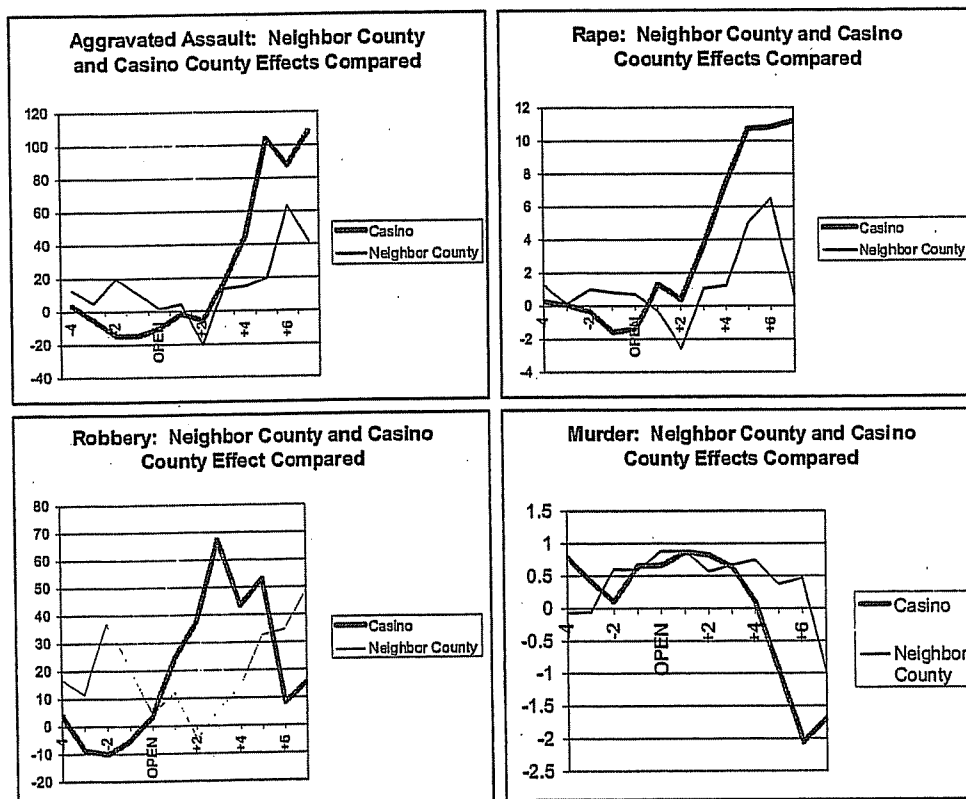
Rape exhibits a similar pattern. Robbery rates fell in neighboring counties before the opening of casinos.

However, starting in the second year after opening robbery rates increased substantially. The U-shaped pattern for the neighboring county crime rate with the base two years after casino opening is a strong indicator that casinos openings lead to robbery spillover effects in neighboring counties.

Murder rates in the neighboring county are not discernably different after the introduction of a casino. The lack of a pattern attributable to the opening of casinos agrees with the host county effects described in the previous section. Figure 11 plots the host county and neighbor county coefficients for property crime. The pattern of increased crime in neighboring counties beginning three or four years after introduction of casinos is apparent for larceny and burglary. As before, the effect in neighboring counties is smaller than in the host county.

Figure 11: Neighbor County Effects: Property Crime Rates
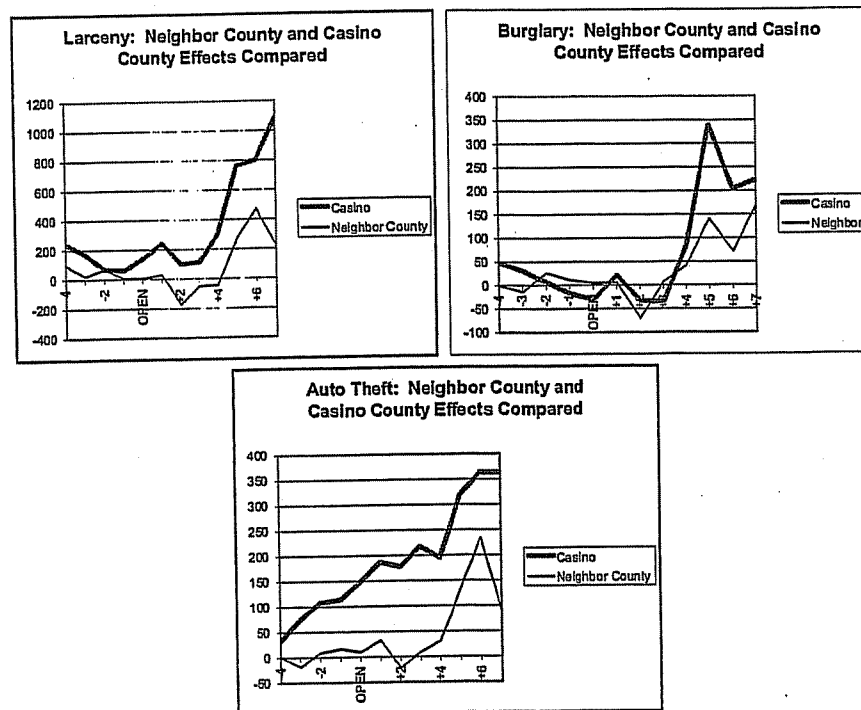
In our discussion of host county auto theft rates we speculated as to why the host county estimated coefficients presented a different pattern of continually growing crime. This pattern of host county coefficients did not appear to be closely related to the introduction of casinos. However, auto theft for neighbor counties displays the pattern of crime increases observed for other crimes. There is a discernably different crime rate three or more years after the opening of the neighboring casino, but not in the years before. The neighbor county effect suggests spillover of auto theft crimes due to the casino, even though host county effects are primarily driven by non-casino factors.

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Taking all crimes into account, the data contain no evidence of compensating reductions in the crime rate of neighboring counties when crime rises in casino counties. The evidence more strongly supports spillover effects for all crimes but murder when casinos are introduced. The spillover effects are on the order of half the size of the casino host county effect. Therefore, we would conclude that casinos create crime, rather than attract it from elsewhere.

VI. Social and Legal Implications

The Table 2 coefficients allow us to estimate the fraction of observed crime due to casinos. In this section we combine these estimates with information about the cost of each crime to estimate social costs.

A. Share of Observed Crime Due to Casinos

Summing the estimated number of crimes attributable to casinos (for each county accounting for how many years the casino was in operation) and dividing by the casino counties' total population for each year measures the contribution of casinos to observed crime. Very little crime was due to casinos until the 1990s. Thereafter a growing percentage of observed crime was attributable to casinos. In 1996, the last year of our sample, casinos accounted for 10.3 percent of violent crime, and 7.7 percent of property crime in casino counties. Estimates of the share of crime attributable to casinos in the same year for individual crimes ranged between 3 and 30 percent. Auto theft was the highest, followed by robbery at 20 percent. The values for the rest of the offenses were between 3-10 percent.

B. Costs of Casino-Induced Crime

Recent studies have estimated the social costs of index crimes. We use total cost per victimization figures adjusted to 1998 dollars using the CPU-U to calculate the total cost of the crimes committed in casino counties that are attributable to the casino presence according to the coefficients in Table 2.[34] We also compute the crime cost for casino counties on a per adult basis. Both results are shown in Figure 12.

Figure 12 shows that total costs were relatively low over most of the 1980s, rising significantly only after 1988. By the end of the period, total costs for the 167 casino counties reached $1.3 billion per year in 1995 and 1996.[35] On a per adult per year basis, the costs were $1.10 or below until 1984, between $5 and $9 through 1988, $33 in 1990, $65 in 1995, and $63 in 1996, the last year of our sample.

We can compare these cost estimates with others that relied on different methodology. Social costs of casinos have commonly been estimated in terms of the average cost imposed on society by a representative problem and pathological (P&P) gambler[36] multiplied by their number. In the most recent comprehensive

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[34]See Miller, Cohen, and Wiersema, 1996, column 4 of Table 9, p. 24.

[35]The precise figures were $1.302 billion in 1995 and $1.275 billion in 1996.

[36]Some studies group problem and pathological gamblers, some treat them separately. Costs are computed by learning the behavior of P&Ps through direct questionnaires and surveys.

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Figure 12: Casino Crime Costs: 1977-1996
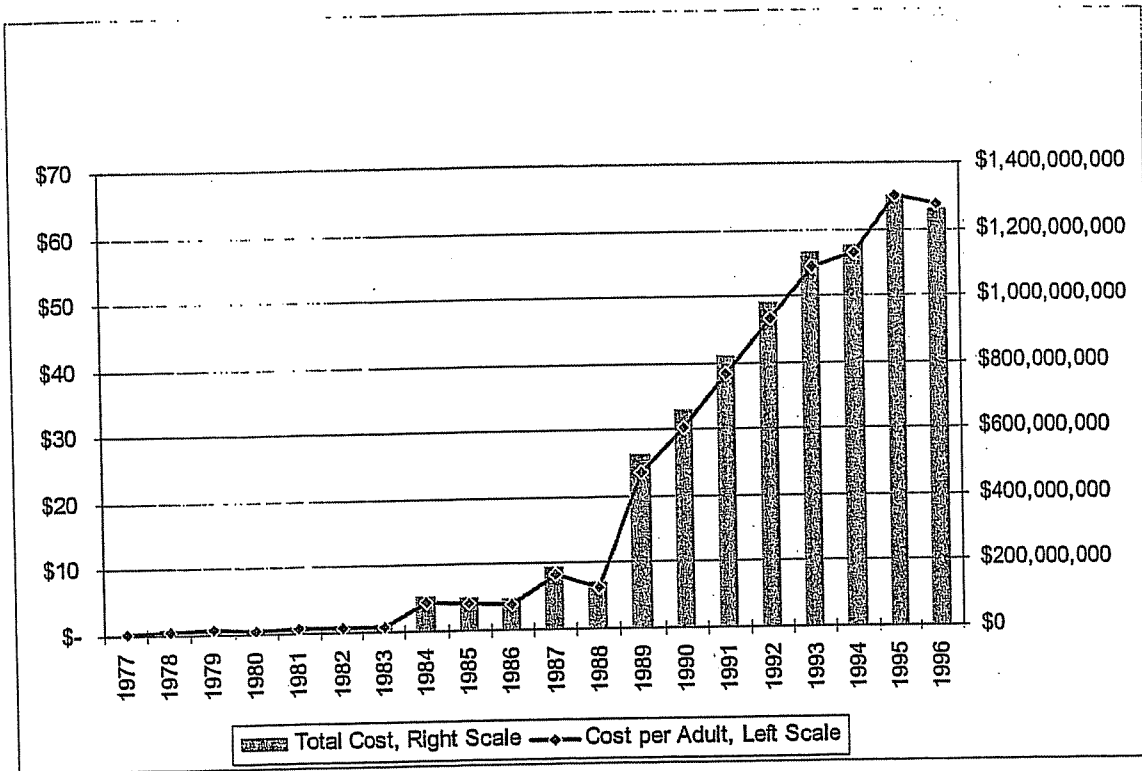
Total Cost, Right Scale ⎯⬦⎯ Cost per Adult, Left Scale

study of this type of which we are aware, Thompson, Gazel, and Rickman (1996b) found that total social costs were $135 per adult in 1996 dollars, of which $57 (42 %) were due to police and judicial-related costs and thefts.[37] Thompson, et al. reported that they intentionally "projected numbers believed to be very conservative," and that the crime costs in their sample (Wisconsin) were probably lower than similar costs in other locations. For all of these reasons, and taking into account the different samples and methodology, their estimate is remarkably close to the direct costs estimated here for 1995-96 of $65 and $63. Applying the Thompson, et al proportions to our data, total social costs in those years would be $156 and $151 per adult.

[37]The social-cost impact of casino-related serious problem gamblers was $138,453,113. Dividing this by the number of adults over 20 in the counties with casinos gives the per adult figure in the text. The proportion of costs due to police, theft, and judicial-related costs is determined from their tables A-2 and A-5.

C. Pigouvian Taxes

What are the policy implications of casino-induced crime? Standard Pigouvian corrective theory for an industry with externalities is that it should be taxed by an amount equal to the costs that it imposes on society. By internalizing the externalities, corrective taxes would cause casinos to adjust their operations or go out of business. Only those that could pass a cost-benefit test by compensating society for the damage they cause would continue to operate. Relative to the revenues for a representative casino of about $230 per adult each year from nearby residents,[38] Pigouvian corrective taxes for the seven index I crimes would represent 25-30 percent of percent revenues. If other social costs are ultimately identified, required taxes would be higher.

An alternative to Pigouvian taxes depends on whether gambling can be offered in a manner that does not lead to externalities. Can gambling be provided in a manner that does not generate problem and pathological gamblers, and thereby lead to fewer crimes? If so, it may be less costly to society to implement than the response based on Pigouvian taxes.

VII. Summary

Our analysis of the relationship between casinos and crime is the most exhaustive ever done in terms of the number of regions examined, the years covered and the control variables used. Using data from every U.S. county from 1977 to 1996 and controlling for over 50 variables to examine the impact of casinos on the seven FBI Index I crimes (murder, rape, robbery, aggravated assault, burglary, larceny and auto theft), we concluded that casinos increased all crimes except murder, the crime with the least obvious connection to casinos. Most offenses showed that the impact of casinos on crime increased over time and began about three years after casino introduction. This pattern is consistent with the theories that problem and pathological gamblers commit crime as they deplete their resources, that nonresidents who visit casinos may both commit and be victims of crime, and that casinos lower information costs of crime and increase the potential benefits of illegal activity. These effects outweigh the potentially positive effects on crime that casinos may have through offering improved labor market opportunities.

According to our estimates, between 3 and 30 percent of the different crimes in casino counties can be attributed to casinos. This translates into a social crime cost associated with casinos of $65 per adult in 1995 and $63 per adult in 1996. These figures do not include other social costs related to casinos such as crime in neighboring counties, direct regulatory costs, costs related to employment and lost productivity, social service and welfare costs. Overall, 8 percent of property crime and 10 percent of violent crime in counties with casinos was due to the presence of the casino. Although robbery, the offense that exhibited the largest increase, is classified as violent crime, it is more appropriately classified as a property crime in that the motivation of its perpetrators is to obtain resources.

We also investigated whether the crime in casino counties is merely attracted (moved) from other regions

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[38]See Grinols and Mustard, 2000.

or is created. Counties that neighbor casino counties generally experienced crime increases whose pattern matched the pattern in casino counties, but smaller. This indicates that crime spilled over from casino counties into neighbor counties, rather than shifting crime from one area to another.

In future research we hope to refine this study. Questions include whether different types of casinos have different impacts on crime. For example, do riverboat casinos affect crime in the same manner as land-based casinos or casinos based on Indian Reservations? Is there a difference based on geographic areas? Do casinos in rural areas affect crime in the same way as those in more highly populated areas? We will also try to decompose the total effect into the fraction due to local residents and visitors. We will also extend the data set as new data become available.

APPENDIX I

Definitions of FBI Part I Index Crimes[39]

The FBI Uniform Crime Report Part I offenses as follows:

I. Violent Crime–includes murder, rape, robbery and aggravated assault.

A. Murder and Non-negligent Homicide is the willful (non-negligent) killing of one human being by another and is based on police investigations, rather than the evaluations of a medical examiner or judicial body. Deaths caused by negligence, attempts to kill, assaults to kill, suicides, accidental deaths, and justifiable homicides are excluded from this category. Justifiable homicides are limited to the killing of a felon by a law enforcement officer in the line of duty and the killing of a felon by a private citizen.

B. Forcible Rape is the carnal knowledge of a female forcibly and against her will. Included are rapes by force and attempts or assaults to rape. Statutory offenses (where no force was used and the victim is under age of consent) are excluded.

C. Robbery is the stealing, taking or attempting to take anything of value from the care, custody or control of a person or persons by force, threat of force or violence and/or by putting the victim in fear. Robbery includes attempted robbery. Robbery is divided into seven subclassifications: street and highway (which accounted for 52 percent of all robberies in 1992), commercial house (11.9 percent), residence (10.1 percent), convenience store (5.3 percent), gas or service station (2.5 percent), bank (1.7 percent) and miscellaneous (13.1 percent).

D. Aggravated Assault is the unlawful attack by one person upon another for the purpose of inflicting severe or aggravated bodily injury. It includes assault with intent to kill. This type of assault is usually

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[39]The definitions are taken from *Crime in the United States: 1993* (U.S. Department of Justice, Federal Bureau of Investigation), Appendix H, 380-381. The statistics quoted for 1992 are taken from *Crime in the United States: 1992, Section One.*

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accompanied by the use of a weapon or by means likely to produce death or great bodily harm. Simple assaults are excluded.

II. Property Crime–includes burglary, larceny and auto theft.

A. Burglary is the unlawful entry of a structure to commit a felony or a theft. It includes attempted forcible entry, attempted burglary and burglary followed by larceny.

B. Larceny (except motor vehicle theft) is the unlawful taking, carrying, leading or riding away of property or articles of value from the possession or constructive possession of another. Larceny is not committed by force, violence or fraud. Attempted larcenies are included. Embezzlement, "con" games, forgery, worthless checks, etc., are excluded. Larceny is subdivided into a number of smaller classifications: items taken from motor vehicles (22.6 percent of all larcenies in 1992), shoplifting (15.8 percent), taking of motor vehicle accessories (14.0 percent), taking from buildings (14.0 percent), bicycle theft (5.9 percent), pocket picking (1.0 percent), purse snatching (0.9 percent), taking from coin operated vending machines (0.9 percent), and all others (24.8 percent).

C. Motor vehicle theft is the theft or attempted theft of a motor vehicle. A motor vehicle is self-propelled and runs on the surface and not on rails. Motor vehicle theft includes all cases where vehicles are driven away and abandoned, but excludes vehicles taken for temporary use and returned by the taker. Specifically excluded from this category are motorboats, construction equipment, airplanes and farming equipment.

APPENDIX II

Explanation of County level Data

The number of arrests and offenses for each crime in every U.S. county from 1977-1996 was obtained from the Federal Bureau of Investigation's Uniform Crime Report County-level Data. When the UCR data had an observation with a FIPS code that did not match any county listed in the codebooks, that observation was deleted.

One significant problem with the offense data has occurred since 1985. When ICPSR compiles the FBI data, it cannot distinguish between legitimate values of 0 and values of 0 that should have been coded missing.[40] If an individual offense or arrest category had a value of 0 and that county had non-zero values for other crime categories, we used the raw data. This rule was followed because the FBI and ICPSR indicated that law enforcement agencies normally report the data for all crimes and do not selectively send data for some types of crimes and not for others. If the number of offenses and arrests was 0 for all categories in a given county in a given year, then that county was assigned missing values for all offense and arrest rates.

State populations were taken from the Statistical Abstract of the United States. The county population, age, sex and race data for all years except 1990 and 1992 were obtained from the U.S. Department of Commerce, a division of the Bureau of the Census. All population measures estimate the July 1 population

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[40]Ken Candell of the FBI and Chris Dunn of ICPSR have provided much assistance with these problems.

for the respective years.[41] The age distributions of large military installations, colleges, and institutions were estimated by a separate procedure. The counties for which special adjustments were made are listed in the report.[42] The 1990 and 1992 estimates were not available from the Census Bureau. The 1990 data were estimated by taking an average of the 1989 and 1991 data. The 1992 data were estimated by multiplying the 1991 populations by each county's 1990-1991 growth rate. The Bureau of the Census provided the data on land area in square miles.[43]

Data on income, unemployment, income maintenance and retirement were obtained from the Regional Economic Information System, a component of the Bureau of Commerce. Income maintenance includes Supplemental Security Insurance (SSI), Aid to Families with Dependent Children (AFDC), food stamps, and other income maintenance (which includes general assistance, emergency assistance, refugee assistance, foster home care payments, earned income tax credits, and energy assistance). Unemployment insurance benefits include state unemployment insurance compensation, Unemployment Compensation for Federal Civilian Employees (UCFE), Unemployment for Railroad Employees, and Unemployment for Veterans (UCX), and other unemployment compensation (which consists of trade readjustment allowance payments, Redwood Park benefit payments, public service employment benefit payments, and transitional benefit payments). Retirement payments included old age survivor and disability payments, railroad retirement and disability payments, federal civilian employee retirement payments, military retirement payments, state and local government employee retirement payments, federal and state workers' compensation payments, and other forms of government disability insurance and retirement pay.

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[41]For further descriptions of the procedures for calculating intercensus estimates of population, see ICPSR (8384): "Intercensal Estimates of the Population of Counties by Age, Sex and Race (United States): 1970-1980." U.S. Department of Commerce, Bureau of the Census. Winter 1985. ICPSR, Ann Arbor, MI 48106. Also, see "Intercensal Estimates of the Population of Counties by Age, Sex and Race: 1970-1980 Tape Technical Documentation." U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 103, "Methodology for Experimental Estimates of the Population of Counties by Age and Sex: July 1, 1975." U.S. Bureau of the Census, Census of Population, 1980: "County Population by Age, Sex, Race and Spanish Origin" (Preliminary OMB-Consistent Modified Race).

[42]U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 103, "Methodology for Experimental Estimates of the Population of Counties by Age and Sex: July 1, 1975." U.S. Bureau of the Census, Census of Population, 1980: "County Population by Age, Sex, Race and Spanish Origin" (Preliminary OMB-Consistent Modified Race), pp. 19-23.

[43]Land area includes intermittent water and glaciers that appear on census maps and in the TIGER file as hydrographic features. It excludes all inland, coastal, Great Lakes and territorial water. Inland water consists of any lake, reservoir, pond or similar body of water that is recorded in the Census Bureau's geographic data base. It also includes any river, creek, canal, stream or similar feature that is recorded in the data base as a two-dimensional feature (rather than a straight line). Rivers and bays that empty into these bodies of water are treated as inland water from the point beyond which they are narrower than one nautical mile across. Coastal and territorial waters include portions of the oceans and related large embayments, such as the Chesapeake Bay and Puget Sound, the Gulf of Mexico and the Caribbean Sea, that belong to the United States and its possessions.

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1   CHAIRPERSON JAMES: Supervisor Jacob, welcome.

2   MS. JACOB: Thank you very much, Madame Chairman and

3 members of the Commission.

4   I am the county supervisor and I represent the second

5 supervisorial district in San Diego County. I think it would be

6 helpful to know what that district looks like, briefly.

7   This district is the largest of the five

8 supervisorial districts in our region. It covers more than 2,000

9 square miles, 535,000 constituents. Also most significantly in

10 the second district are 10 of the county's 17 Indian reservations

11 and all three of the county's gaming tribes: Sequan, Viejas, and

12 Barona. All of the Indian nations in my district as well as

13 throughout the county are an important part of this region's

14 economic and cultural makeup. I'm very please to have the

15 opportunity to speak to you today regarding Indian gaming,

16 concerns and the relationship this county and the Indian tribes

17 have established which I think is significant.

18   The Board of Supervisors has had some success in

19 establishing a government to government relationship with the

20 members of the tribes in second district. But this government to

21 government relationship did not always exist. In the past, very

22 frankly, there was little to no relationship and as a result of

23 that it was very difficult if not impossible to resolve problems

24 of mutual interest.

25   For example in 1994 there were two issues

26 specifically focusing on proposed land uses and land annexation

27 which were a cause of concern particularly to the surrounding

28 communities.

1   The first was Astri Corporation, they were operators

2   of the Sequan casino and they purchased property outside of the

3   reservation, deeded it to the Sequan tribe for the purpose of

4   bringing it into trust and providing the sovereignty to that new

5   land.

6   When it was submitted to the Department of Interior,

7   they requested that this newly acquired property be developed as

8   I indicated tribal land, thus making it a part of the sovereign

9   reservation. And as you no doubt are aware of such a designation

10 were granted potential uses for the newly acquired property would

11 not have been subject to any local land use laws or the community

12 planning process.

13   Another situation occurred in the rural community of

14 Jamul in that same year, '94.   Representatives of station,

15 station casinos based in Las Vegas entered into a management

16 contract with the Homul of Mission Indians to develop a proposed

17 $30 million casino on an existing six acre, six acre reservation

18 and additional land they hoped to purchase have designated as

19 tribal land. You can imagine the consternation of the community

20 over such a proposal on a two lane road and very rural area.

21   Both these situations and the impact of residents on

22 adjacent communities in terms of traffic, in terms of crime,

23 property devaluation, would have been devastating.

24   It's one thing to respect the sovereignty which

25 should be respected of existing tribal lands, but it's another to

26 annex land simply for the purpose of circumventing local land use

27 and zoning regulations. Big difference.

1   As a result of these two situations, this County

2   Board of Supervisors unanimously adopted a resolution in March of

3   1994 urging the Secretary of Interior to deny the designation of

4   tribal land to newly purchased land acquired for Indian gaming

5   and related uses.   And today the Secretary has honored this

6   Board's request.

7   Also, local governments incur the cost of law

8   enforcement for gaming related crimes whether they are property

9   crimes that occur at a casino or more serious crimes related to

10   individuals who have been at the casino.

11   For example, the San Diego County Sheriff who is

12   responsible for law enforcement adjacent to the three of the

13   reservations where there is gaming, responded to almost 1,000

14   calls for service in 1996 alone.

15   Now I'd like to focus on the unique government to

16   government relationship that we have established in San Diego

17   County.   Over the last several years, since 1994, the

18   relationship between the sovereign tribal governments of Sequan,

19   Barona and Viejas and San Diego County government has improved

20   dramatically.   In fact, these three tribes, the Sequan, Viejas

21   and Barona casinos have become collectively the largest employer

22   in the eastern San Diego County region.   They employ more than

23   4,000 people with a payroll of $60 million in the second

24   supervisorial district alone and $87 million annually county

25   wide.

26   These three tribes spend at least $79 million on

27   outside goods and services, donate at least $4 million annually

1 to charities and community event. They are truly good county and

2 corporate citizens, good partners.

3   Each day 15,000 people in addition -- every day

4 15,000 people in our region patronize these facilities. These

5 three tribes clearly are major contributors to our economy,

6 recreation, and our tourism industry.

7   And that's why in August of last year with the

8 deadline for a compact with Governor Wilson, looming over their

9 heads, I called on the governor to enter into negotiations

10 immediately with Barona, Sequan and Viejas Indian tribes.

11   Subsequently, the Board of Supervisors unanimously

12 supported this call for action. Our request included that any

13 compact include a local government compound which identifies

14 local concerns.

15   Number one, to allow for counties or cities to

16 receive revenue from state to mitigate local problems assuming

17 that the state would be receiving their share of revenues.

18   Number two, to provide a formal communication

19 mechanism for early discussions at the local level to enhance

20 government to government relationships, to determine potential

21 impacts and mitigation requirements of any problems associated

22 with new developments.

23   Barona, Viejas, and Sequan supported this action.

24 This was a new beginning in San Diego County where we stood

25 shoulder to shoulder, government to government on that day.

26 And since then legal and political wrangling has long been, long

27 ongoing regarding a compact.

1   It's very unfortunate. It's sad if not tragic that

2 the same the casinos have continued to operate in a fashion which

3 the community respects and enjoys.

4   While there are still some concerns in specific

5 areas, there have clearly been some successes in addressing these

6 concerns because of the government to government relationship.

7   A couple of examples. The newly open Viejas Outlet

8 Center, the tribe is voluntarily collecting sales tax which will

9 benefit the San Diego community as a whole. The outlet center is

10 expected to gross in its first year some $30 million.

11   And, near Barona, the county and the Barona tribe are

12 participating in a joint project to improve road. Barona has

13 agreed to contribute $3 million to this project which will

14 benefit the casino and its patrons as well as residences and

15 commuter who use this road.

16   In addition to that, preliminary discussions have

17 occurred with the county, the Viejas tribe and CalTrans to build

18 a new off-ramp near the Viejas casino and outlet center which

19 will benefit both Viejas and the community.

20   My point, the government to government relationship

21 established between these tribes and the county of San Diego is

22 working.

23   There is no easy answer but one thing is clear to me

24 and that is this. That the answers are to be found at the local

25 level. And what works in San Diego County may not work for the

26 rest of the state and the rest of the nation.

27   I'd like to thank you for the opportunity of

28 addressing this issue before you today and providing a local

1   perspective and I'd be happy to answer any questions you may

2   have.

3   CHAIRPERSON JAMES: Thank you very much.   Are there

4   any questions from Commissioners?

5   We really do appreciate your being here and

6   appreciate the Senator recommending you to this Commission.   It

7   is always helpful to have a perspective from state and local

8   official and we appreciate the time that you've given to be here

9   today.

10   Thank you very much.

11   MS. JACOB: Thank you.

12   (Applause.)

13   CHAIRPERSON JAMES: Is that your own fan club?

14   UNIDENTIFIED SPEAKER: Hey, she's going to be re-

15   elected.

16   CHAIRPERSON JAMES: She's going to be re-elected, you

17   think.

Committee on Resources
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Written Testimont for the U.S. House Committee on Resources
Presented by Representative Fulton Sheen

Wednesday, April 5, 2006

Good morning. Thank you Chairman Pombo and members of the House Committee on Resources for the opportunity to testify today.

My name is Fulton Sheen and I'm the State Representative from Michigan's 88 th District. This district is largely rural, and contains the land that has been slated for casino development by the Gun Lake Tribe. I have served in the Michigan State Legislature since 2003, and held the position of Allegan County Treasurer prior to taking state office. Since this casino was proposed some five years ago, my position as an elected official as well as my deep ties to Allegan County have caused me to spend a great deal of time and effort studying the issue of tribal gaming and realizing the deep need for IGRA reform.

I want to commend the chairman and members of this committee for their leadership and foresight in tackling this issue that has been ignored for far too long. The rampant proliferation of tribal gaming is running roughshod over states' rights and local control and is jeopardizing everything from my own neighborhood to, as the Jack Abramoff scandal has demonstrated, the very integrity of our federal political system.

In 1988, Congress passed the Indian Gaming Regulatory Act ("IGRA") in an effort to control the development of Native American casinos, and, in particular, to make sure that the States had a meaningful role in the development of any casinos within their borders. At that time, Native American gambling accounted for less than 1% of the nation's gambling industry, grossing approximately $100 million in revenue.

Since that time, the Native American casino business has exploded into an 18.5 billion dollar industry that controls 25% of gaming industry revenue, with no end in sight. Despite this unbridled growth, IGRA and the land-in-trust process remains basically unchanged, and the body charged with oversight of this industry, the National Indian Gaming Commission ("NIGC") limps along with 78 employees and an annual budget of $10.5 million. In contrast, the State of Nevada runs its oversight agency with 439 employees and an annual budget of $36.4 million.

While I whole-heartedly agree that "reservation shopping" is an activity that must be stopped, it is just one tiny component of the full legislative overhaul that is needed. My message to you today is that IGRA and its associated land in trust process is outdated, broken, open to manipulation by special interests and in desperate need of immediate reform. It has unfairly and inappropriately fostered an industry that creates enormous wealth for a few select individuals and Las Vegas interests at the expense of taxpaying families, small businesses, manufacturing jobs, and local governments. My plea to you is that you study these issues in depth, and that you impose an immediate two-year moratorium on any further casino expansion pending the results of your study, as suggested by Michigan Congressman Mike Rogers. Twenty-three casinos in Michigan is more than enough, and so is the $18.5 billion this nation already spends in American Indian casinos. Congress needs to get its arms around this while it still can.

In my home state of Michigan, we are in the midst of a fiscal and job crisis. While tribal casinos are booming, our state economy lags among one of the worst in the nation. Michigan has been among one of the hardest hit states in the nation due to new global market forces, outsourcing of jobs, and skyrocketing labor and health care costs.

Michigan ranks among the top in the nation with the most number of casinos, with 20 existing facilities (17 tribal, 3 non-tribal) and three approved tribal facilities for a total of 23 casinos. Unfortunately, Michigan also

ranks top in the nation for our unemployment rate, with manufacturing job losses in Michigan alone accounting for approximately 25% of our nation's lost manufacturing base. Discretionary spending is down, bankruptcies are up, and several cities, including Detroit, are on the verge of receivership.

Casino proliferation is bound to make the economic picture even worse for Michigan. Our research shows that Michigan has reached a saturation point in casino gambling and any jobs and money tied to new tribal gaming will only displace jobs and consumer spending that would otherwise occur in traditional taxpaying entertainment-related industries. In other words, further casino development will not add jobs and value to the Michigan economy. Rather, it will shift jobs and money from existing taxpaying businesses to tribal operation that do not pay state or local taxes.

Our research also shows that while local and state governments receive some revenue sharing percentages from tribal gaming, the dollars pale in comparison to the overall new costs to government and social service agencies from increased infrastructure demands, traffic, bankruptcies, crime, divorce, and general gambling-related ills.

The bright lights, big numbers, and empty promises of casino gambling have blinded too many local and state governments. In Detroit, the three proposed casinos were hailed as new economic engines that would revitalize the downtown area with new jobs, new buildings, and spin-off entertainment businesses. They promised new hotels, new restaurants, new entertainment, and more tourists from outside of the area. Five years since the casinos opened, the promises remain empty or broken.

According to a recent Detroit Free Press article, "beyond the casinos walls, little spin-off is evident." The Michigan Restaurant Association reported that there has been little to no new restaurants and many restaurants that were on the brink have shut down. Analysis also reveals that an overwhelming majority of the dollars spent in Detroit casinos are siphoned from individuals located within a 50-mile radius. Bankruptcy has doubled, crime has risen, and the city is running a $1.2 million budget deficit on police, fire, and gambling-related services, even after receiving their revenue sharing payments.

Uncontrolled proliferation of casino gambling will also threaten the investments that we have made in Michigan to transform ourselves in the wake of manufacturing losses. We are cultivating innovative economic development opportunities in the areas of life sciences, advanced manufacturing, and information technology. We are also investing billions to revitalize our core cities with new and improved arts, cultural, and entertainment related activities to curb sprawl and draw in more tourist, homeowners, businesses, and tax revenue. In Grand Rapids alone, more than $1 billion in public and private investments has been spent in the last two decades to revitalize our core city. The proliferation of casino gambling threatens to suck jobs and dollars away from these emerging economic development efforts.

I am presenting you with these Michigan-specific details because I believe it demonstrates the urgent need for you to act swiftly and decisively to impose a two-year moratorium, to study the issues thoroughly, and then to craft a new solution that takes into account the new realities of the Native American gambling business as it exists today. The existing laws and regulatory tools are not working. We cannot afford to let casinos proliferate while this study goes on because the costs will be too high.

In August 2001, the Match-E-Be-Nash-She-Wish band or Gun Lake Tribe of Pottawatomi Indians filed an application to put 10 parcels of land into federal trust with the Bureau of Indian Affairs and released plans to build a 180,000 square foot Class III casino with 2,500 slot machines, 75 game tables, a hotel, convention center, golf course, specialty restaurants, and entertainment facilities in Allegan County, which is my district, between the core cities of Grand Rapids and Kalamazoo. The casino would operate around the clock.

Following this announcement, myself along with a group of concerned community leaders turned to the Grand Rapids Area Chamber of Commerce with questions about the impact the proposed Gun Lake casino would have on the region. The Chamber commissioned the Anderson Economic Group to conduct an independent economic impact study to assess the impact of the proposed tribal casino in Allegan County.

The economic impact study revealed that for every one job created by the casino, more than two jobs would be lost in the surrounding counties. The study also found that the surrounding counties of Kalamazoo, Kent, Ottawa, and Barry would suffer an economic hemorrhage of more than $880 million lost over 10 years. The

net economic loss to the entire region significantly outweighs the modest localized gains in the immediate area around the casino.

The independent economic research underscored what similar studies have found. Unlike the destination casinos in Las Vegas, most casinos in places like Michigan do not generate new dollars or new jobs; rather they siphon off jobs, money, and economic vitality from surrounding communities in a 50-mile radius and increase costs to government and social service agencies. In fact, the vast majority of casino revenues come from the surrounding communities. Almost all of those dollars would have been spent in other local, taxpaying businesses in the absence of the casino.

As this Committee knows, any major new federal project—and that is what this casino will be if the federal trust process goes forward—must complete an Environmental Impact Statement ("EIS"). The only way a project can avoid this requirement of the law is by demonstrating that there is no conceivable way in which the project will have a significant impact on the host community. The Bureau of Indian Affairs made this finding for the Gun Lake project—erroneously in our view—in early 2003.

On February 10, 2003, the Grand Rapids Chamber objected to the finding and to the Environmental Assessment that supposedly supported it. At a minimum, the Chamber urged the BIA to complete a full scale EIS for the project. Incidentally, a tribe promoting a casino project in Battle Creek, about 70 miles or so from the Gun Lake project, is now completing a full scale EIS after a Judge Penfield Jackson here in Washington rejected the Environmental Assessment the BIA had relied upon to evade the EIS requirement in that case. But at Gun Lake, the BIA persisted in its refusal to proceed with an EIS for the Gun Lake project and published its decision to proceed with a trust acquisition for the Gun Lake tribe.

The Gun Lake Tribe's environmental assessment was an incomplete and inaccurate reflection of the regional economic, environmental, and social impacts associated with the proposed casino. The Tribe's study took a cookie-cutter approach to a very complex issue, basically stating that this proposed government-subsidized development would have no negative impact on the surrounding community and would result in the creation of 4,500 jobs.

Of course, the BIA-approved study did not consider the associated economic hemorrhage for the entire region, as shown by the Anderson study. It will now be necessary for citizens like me, who are determined to spare my community the negative effects of this casino project, to resort to litigation, as citizens have done elsewhere in my State and throughout this Country. I do not think this is what Congress had in mind when it adopted IGRA almost 20 years ago for a then-struggling Native American casino industry.

Unfortunately, IGRA and the rules pertaining to the Land-in-Trust process for casino site acquisitions do not require a comprehensive, regional environmental impact study and instead only require a pin-point study of the proposed development. Nor does the process include a failsafe process for ensuring that the will of the citizens in the host community is carefully considered. Our polling demonstrates that over 64% of the citizens in the region are opposed to the casino development. In fact, my State recently voted overwhelming 58% - 42% to subject any new non-Indian casino gambling in the State to a vote of the people. And yet, we are now told by the BIA and others that this overwhelming voice of the citizenry—supported as it is by solid economic and social research—cannot be heard at all, and will have nothing to do with whether this project is rammed down the throat of an unwilling host community.

This is not the way it should be, and I do not think this is what Congress had in mind when it passed IGRA. In fact, when Congress originally enacted IGRA, it provided that, as a general rule, casino gambling would not take place on newly acquired trust land. There were, of course, some exceptions, but the general rule was no casino gambling on new trust acquisitions. I believe Congress passed this general rule to prevent precisely what we see actually happening now: namely, a mad and largely unregulated land rush pushed by casino developers eager to cash in on a profitable revenue stream that is not burdened by the same tax rates or regulations that other businesses have to incur. Somewhere along the way, the good intentions of Congress have been hijacked, and it is time for this body to re-assert control over this process.

Since 1988, Las Vegas investors and tribal casino owners have become wealthier, smarter, and better equipped with new technology and a barrage of lawyers and lobbyists to manipulate the federal gaming law. Casino stakeholders and special interests have started "tribe-shopping" and existing tribal casinos have stretched the limits of the law with "off-reservation casinos," something this committee has realized must be

stopped. Casino stakeholders and tribal casino owners have manipulated the definition of Class II gaming by introducing slot-machines that somehow supposedly meets the definition of Class II bingo-style gaming. When Congress approved the definition of Class II gaming in 1988, a bingo-hall meant a bingo-hall. They did not intended for slot machine like to pass as a bingo-machine without regulation or oversight from appropriate authorities, and without the approval of a valid state compact.

Tribal leaders and their Las-Vegas investors have also become brazen in their threats to open casinos with or without state approval. They have used ethically questionable promises of contracts, marketing, and charitable giving as a means to foster support. And, in the case of Gun Lake, threats to only use contractors that are members of the Kalamazoo Chamber vs. the Grand Rapids Chamber because one supported the project and one opposed it.

As Senator John McCain recently stated in an AP story, "he never envisioned the explosive growth" triggered by the federal Indian gaming law. It is fair to assume that seventeen years ago, the other members of Congress also likely did not foresee nor consider the potential negative regional impacts of tribal casinos. The current law reflects an outdated form of thinking and rules that desperately need reform and updating to require a comprehensive and regional environmental, economic and social impact assessment for any and all land-in-trust applications.

IGRA, as currently implemented by BIA, also ignores and ultimately disregards the will of the voters, the sentiment of state and local elected officials, state legislative action opposing a tribal casino development, and/or regional opposition to a proposed tribal casino project. Case in point is the proposed Gun Lake tribal casinos:

First, every state and several of the federally elected official in West Michigan wrote to the BIA opposing Land-in-Trust for the proposed Gun Lake casino. I was deeply involved in these efforts and was amazed at the resounding unity expressed by my colleagues. However, the casino project is going forward.

Second, Michigan voters established an overwhelming public mandate against the expansion of casinos in the state with 58% approval of Proposal 1, a constitutional amendment requiring a local and statewide vote of approval before any new non-tribal casino gambling will be allowed to operate. In Allegan County and the counties surrounding the proposed Gun Lake tribal casino, the margin of voter approval for Proposal 1 was even greater (Allegan County 64-36, Kent County 63-37, Kalamazoo 59-41, and Ottawa County 70-30). The project is going forward anyway.

Third, in December 2004, the Michigan State Senate rescinded support for the Gun Lake tribal casino compact, citing voter sentiment in Proposal 1 and the Anderson Economic study results. The project is going forward anyway.

Fourth, 23 is Enough just released an independent public opinion poll conducted by Harris Interactive, one of the nation's largest and most respected polling firms, to assess public support for the proposed Gun Lake casino.

The results reveal strong opposition to the proposed Gun Lake casino among West Michigan voters in Kent, Kalamazoo, Ottawa, Allegan Counties. Most notably, 85% polled said 23 casinos are enough (47% too many casinos, 38% just enough casinos). 59% said Governor Jennifer Granholm should not negotiate a compact with the Gun Lake Tribe (59% not negotiate, 36% negotiate). 64% oppose Gun Lake casino after being informed about the positive and negative impacts (64% oppose, 33% support). Women 35+ years old are among the core group of opponents to the casino. The project is going forward anyway.

These polling results, coupled with the overwhelming statewide voter approval of Proposal 1, action by the State Senate, and overwhelming opposition among state elected officials in West Michigan are considered meaningless and are disregarded in the Land-in-Trust application process. This is important and meaningful information that bears significant weight and demands consideration. This is not the way it should, nor the way it was intended to be.

In summary, IGRA is broken, outdated, and after 17 years without review or updating, needs significant overhaul and reform. While I commend Chairman Pombo's initiative to remove "reservation shopping,"

much more is needed. I urge this committee to take its reforms one step further by imposing a moratorium on all land-in-trust applications, including the Gun Lake Tribe's land acquisition, until a thorough debate and comprehensive review is conducted and IGRA is updated and reformed to address the following concerns:

- Mandatory requirement of a comprehensive, regional Economic, Environmental, and Social Impact Statement for all Land-in-Trust applications . The Tribes should be required to account for and project the regional economic, social, and environmental impacts of a proposed casino. Indicators could include job creation/loss, business investment creation/loss, absenteeism, productivity, tardiness, bankruptcy rates, crime rates, divorce rates, abuse/neglect rates, and overall rate increase of problem/addicted gamblers.
- Mandatory reporting and full disclosure of financial and legal records of non-tribal casino management companies . With a growing number of tribal casinos declaring bankruptcy and record level of fines for improper conduct being assessed to casino management companies, full disclosure should be mandatory on all financial and legal records and issues.
- Local government, state legislative, and gubernatorial approval for land in trust . Congress should amend IGRA to require that a Governor must concur in all cases before state lands are put into trust for the purposes of gambling. There should also be a provision that requires the support of the state legislature and affected local units of government before land is removed from the tax rolls. Mechanisms such as this will go a long way to restoring the general rule Congress established in 1988 against casino gambling on newly acquired trust land.
- Local and statewide voter approval of any Land-in-Trust application for the purposes of Class III casino gambling . In Michigan, precedent was first set in the local and statewide vote on the Detroit casinos, and then in 2004, Michigan voters established a public mandate by requiring a local and statewide for any casino-style expansion. Tribal casinos were exempt because of federal constitutionality issues. The federal law should follow Michigan's lead and apply the same voter approval standards to tribal casinos.
- Clarification of Class II gaming to eliminate abuses and loopholes for "electronic bingo games' . In order to get around the compact requirements of IGRA, many tribes and their non-Indian sponsors have turned to "gray games" to open or expand a casino. Class II gaming allows bingo to be played on tribal lands even without a state-tribal compact. Slot machines, however, are a Class III device and require a compact. Manufacturers of slot machines have now created electronic bingo games that look and feel like a slot machine, but that the gambling industry is trying to pass off as allowable Class II bingo. The Class II loophole has created a difficult situation for states either trying to halt the expansion of casinos or regulate them in a responsible manner. I recognize that the NIGC is trying to address this problem, but frankly it cannot wait. NIGC does not have the resources to reign in this problem. Indeed, it lacks the resources to effectively regulate an expanding $18.5 billion industry, much less take on this added regulatory burden. Congress needs to re-assert its express intent to forbid slot machines of any kind—whether tagged with a "bingo" name or not—in the absence of a valid state compact

In closing, I reiterate my plea to you to study these issues in depth, and urge you to take immediate action and impose a moratorium on any further casino expansion pending the results of your study. It is imperative that Congress takes swift and decisive steps today to get its arms around this issue before more jobs are lost and more families are put at risk.

LEO T. CONNOLLY
SHERIFF

JAMES R. LARSON
UNDERSHERIFF

OFFICE OF THE SHERIFF
SENECA COUNTY

Indian Gaming and the Impact on Law Enforcement

Chief Deputy Michael K. Cleere

Historically, Indian gaming has had a significant impact on local law enforcement and all emergency services. The overall impact of Indian gaming is still uncertain. Traffic issues, motor vehicle accident, increases in crime and the social-economic impact of Indian gaming on rural communities directly impacts emergency and public safety services and jeopardizes already cash strapped local law enforcement, fire and ambulance departments. Additional support costs that Towns and Counties are forced to bear, to provide the increase in services, can be detrimental to already financially challenged local governments.

Research had shown that Counties who have had Indian gaming facilities move into their areas, have realized increases in many areas of public safety. The most dramatic increase noted is in traffic problems. Large scale bingo halls, casinos and other gaming facilities attract large numbers of people. In rural areas, where roads are not designed to handle large volumes of traffic, congestion occurs, causing "bottle-necking", an increase of motor vehicle accidents, and related cases of "road rage", traffic violations and other traffic related problems. This requires increases in police intervention and control, complaints, ambulance and fire calls.

Crime rates would be expected to increase due to the very nature of the gaming industry. Financial crimes, theft, vice, assaults and even murders have been attributed directly or indirectly to gaming facilities.

In October 1995, gunfights broke out in the Elem Indian colony in Lake County, California over control of the tribe's casino, resulting in seven people wounded. In Madison County, New York, an arson fire was set, burning a large scale bingo hall over tribal disputes. There has been a reported history of "unsavory" business connections established by some Indian tribes, which may lead to criminal activity.

The social-economic impact of gambling further impacts communities. Gambling addictions and compusion problems often lead to criminal activity, domestic violence problems, suicide and other issues. "Quality of life" issues are affected. The indirect impact on local communities directly affects law enforcement and other emergency services.

Initial research has shown that in rural areas that have been impacted by Indian gaming, a twenty percent (20%) increase in complaints and calls for service by local law enforcement can be expected. An increase in staffing, equipment and support services by the same percent would be needed to safely handle the public safety needs of the community. Impacts on jail populations and staffing would also be affected. With an increase in crimes, there is a increase in arrests. Courts, District Attorneys Offices and other entities in our criminal justice system would be indirectly affected.

The costs to local government associated with Indian gaming can be substantial. Further study should be done to determine the fiscal and economic impact of Indian gaming in Seneca County.

Exhibit N

Exhibit O

Exhibit P

Exhibit Q